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bulletin of
Duke University
1988-89

The School of Law



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The information in this bulletin applies to the academic year 1988-89 and is accurate and current, to the extent possible, as of June 1988. The University reserves the right to change programs of study, academic requirements, teaching staff, the calendar, and other matters described herein without prior notice, in accordance with established procedures.

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Calendar of the School of Law 1988-89

Summer Session

1988

May	
30	Monday, Tuition due, registration materials mailed
June	
4	Saturday, Orientation
6	Monday, First day of classes
July	
4	Monday, Holiday
August	
8	Monday, Last day of classes
10	Wednesday, Final examination
13	Saturday, Final examination

Institute of Transnational Law (Duke in Denmark)

1988

July	
9	Saturday, Registration
11	Monday, First session classes begin
22	Friday, Last day of classes, first session
25	Monday, Second session classes begin
August	
5	Friday, Last day of classes, second session
8-9	Monday-Tuesday, Examination period

Fall Session

1988

August	
8	Monday, Tuition due for entering students; registration materials mailed
18	Thursday, First day of class for upperclass students
20	Saturday, Orientation for entering students
22	Monday, First day of classes for first-year students
October	
24-28	Monday-Friday, Research and writing for first-year students; recess and placement travel for upperclass students
November	
21-23	Monday-Wednesday, Recess for research and writing for first-year students
24-25	Thursday-Friday, Thanksgiving recess
December	
2	Friday, Last day of class for upperclass courses and for first-year courses that continue in spring term. First-year courses taught only in fall term continue on modified schedule to minimize conflicts
5-17	Monday-Saturday, Reading and examinations for upperclass students
9	Friday, Last day of class for first-year students meeting in fall term only
12-19	Monday-Monday, Reading and examinations for first-year courses

Spring Session

1989

January	
9-13	Monday-Friday, First-year students meet Lawyers and Clients course
11	Wednesday, First day of class for upperclass courses
14	Saturday, Examination in Lawyers and Clients
16	Monday, first day of classes for all first-year courses
March	
6-10	Monday-Friday, Recess for research, writing, and placement travel

April	
21	Friday, Last day of class for first-year courses
24-25	Monday-Tuesday, Reading period for first-year students
25	Tuesday, Last day of class for upperclass courses
26	Wednesday, Reading and examinations, all classes begins
May	
13	Saturday, Examination period ends
14	Sunday, Commencement

University Administration

H. Keith H. Brodie, M.D., LL.D., *President*
 Phillip A. Griffiths, Ph.D., *Provost*
 Eugene J. McDonald, LL.M., *Executive Vice-President*
 William G. Anlyan, M.D., D.Sc., *Chancellor*
 Joel L. Fleishman, LL.M., *Vice-President*
 J. Peyton Fuller, A.B., *Vice-President, Planning and Treasurer*
 William J. Griffith, A.B., *Vice-President for Student Affairs*
 John J. Piva, Jr., B.A., *Vice-President for Alumni Affairs and Development*
 Patricia C. Skarulis, M.A., *Vice-President for Information Systems*
 John F. Adcock, M.B.A., *Vice-President and Corporate Controller*
 Tom A. Butters, B.A., *Vice-President and Director of Athletics*
 N. Allison Haltom, A.B., *Secretary of the University*

Law School Administration

Pamela B. Gann, *Dean*
 Horace B. Robertson, Jr., *Senior Associate Dean*
 Gwynn T. Swinson, *Associate Dean for Student Affairs and Admissions*
 Lucille M. Hillman, *Assistant Dean for Major Projects*
 Judith A. Horowitz, *Assistant Dean for International Studies*
 Evelyn M. Pursley, *Assistant Dean for Alumni Affairs and Annual Giving*
 Richard A. Danner, *Director of the Law Library*
 Joyce C. Bumann, *Coordinator, Alumni Activities*
 Sherry L. Caplan, *Administrative Assistant Senior, Budget and Personnel*
 Charanne C. Clarke, *Administrative Assistant, Research and Support Services*
 Mary T. Hawkins, *Financial Aid Counselor*
 Cynthia A. Peters, *Assistant Director of Placement*
 Debra A. O'Reilly, *Administrative Coordinator, Admissions*
 Sally M. Alston, *Staff Specialist, Student Records*
 Janse T. Conover, *Staff Specialist, Communications and Conferences*
 Mary Jane Flowers, *Staff Assistant, Publications*
 June C. Hubbard, *Editorial Assistant, Senior*
 Tonya E. Jacobs, *Staff Assistant, Dean's Office*
 Lynda M. McBroom, *Staff Assistant, Alumni*
 Ann Marie Nebel, *Staff Specialist, Alumni*
 P. Anita Parsley, *Staff Assistant, Major Projects*
 Sandra R. Peters, *Staff Assistant, Placement*
 Joann G. Rausch, *Staff Assistant, Admissions*
 Sarah F. Roberts, *Staff Assistant to the Director of the Library*
 Kay G. Walker, *Staff Assistant, Student Services*



Altruism combined with realism; knowledge of fundamental principles and capacity to apply them; courage to insist on the right and patience to achieve it; understanding of the timidity of the weak; fearlessness of the domination of the powerful; sympathy for the mistakes of the indiscreet; caution of the craftiness of the unprincipled; enthusiasm for that which is fine and inspiring; reverence for that which is sacred; these are some of the attributes of great lawyers.

Justin Miller
Dean, 1930-34
Duke University School of Law

The Distinction of Duke



Duke University

Of the major American universities, Duke has the most recent origins. Duke University was founded in 1924 with a single giant benefaction to a small but well-established Methodist college. It promptly took a place among the newly prominent American universities, adding professional schools of national stature in divinity, engineering, law, and medicine to an increasingly excellent undergraduate college. The Medical School was the first to attain international stature, and its training program and hospital are today among the finest in the world. The divinity, engineering, and undergraduate programs are all now widely recognized as among the best. In recent years, the University has added a Graduate School of Business which has achieved an excellent reputation in a short period of time. A strong initiative is now under way to increase the stature of the Graduate School.

The Law School was established as a graduate professional school in 1930, although its roots can be traced to lectures on law conducted in Trinity College as early as 1864 by the then president of the college. The Law School quickly thereafter acquired a distinguished law faculty, and began competing for the ablest law students in the United States. Its development in the early post-World War II era was impeded by the difficulty of attracting faculty and students to the segregated South, an impediment that began to dissolve about 1960 and which seems now thankfully to have disappeared.

Aims

The aims of the Law School at Duke are not distinctive among university law schools. The school strives to serve its students and the law by providing a place where professors and students share an effort to explore, to master, and to illuminate law.

Duke does not expect all law students to come to professional school with well-defined career goals; these would necessarily be premature, and often ill-conceived. The Law School does expect its students to bring a respect for the academic enterprise and a curiosity about the institutions and the values of law. It also expects that those who leave it after three years of professional study will share a commitment to the craft of law, and a spirit that will help them bear important responsibilities through all of their productive years, whether or not their careers keep them in conventional law practice. The contribution which Duke hopes to make to its students is to provide an environment in which shared commitments can germinate and professional maturation flourish. Some of the means by which Duke seeks to make such a contribution are distinctive.

The Learning Environment

The Law School at Duke is a learning environment different from that of most law schools serving competitively selected students. The relation of the professional students to one another is not that which is usually found.

Duke law students come from all parts of the United States, and in significant numbers from other parts of the world. About a tenth are graduates of Duke's Trinity College, and a partly overlapping tenth are from North Carolina; thus, the great majority of Duke law students have few prior contacts with the area. While there is no university housing set aside for law students, most do live within a few minutes of the school. As a result of these circumstances, Duke law students are more likely than others to find their social activities merging with their professional relations.

Duke law students are persons who have known substantial academic success. Most have attended competitive undergraduate schools; most have academic averages nearer *A* than *B*; and most have Law School Admission Test scores in the low forties or higher. As one should expect from such a group, they are competitive and industrious. The Law Library receives intensive use by students throughout most weekends and a few students can be found there into the small hours of most nights.

At the same time, however, the students are in competition with one another to only a limited degree. This is so because Duke law graduates disperse more broadly on graduation than do those of any law school; their placement market is very good; and it is rare for two Duke students to be in direct competition for the same first job. This circumstance, combined with the sociability of the students, produces a competitive environment that is more supportive than most.

This condition is enhanced by the relatively small size of the school. The school aims at an entering class of about 170. Several of the schools with which Duke competes for the most able students are twice that size, and some are three times as big. While size may offer advantages, it also depersonalizes relationships among students.

Despite the small size of the school, there is an unusually large number of opportunities for upperclass students to participate in significant shared professional activities. Thus, the Law School publishes three widely circulated journals which publish student scholarship and which are edited by students, with varying degrees of faculty involvement. A higher percentage of Duke law students are engaged in such activities than is the case for any other law school.

It is also perhaps pertinent that the law building at Duke was built for functional use, not as a monument. The building is less handsome than most at Duke, and is now small for the level of activity that it houses. Plans for its renovation and enlargement have been made and funds are now being raised for that purpose. It is not intended, however, to enlarge the student body.

Finally, the Duke law faculty is more accessible than most. In part, this reflects a curricular design which brings each first-year student into a tutorial relationship with a faculty member. In part, it reflects the ethic of the faculty that their profession is teaching and scholarship, not the practice of law; most professors are in their offices on most days throughout the calendar year.

For these reasons, the environment of the Law School is distinctive. Duke law students compete vigorously, but as friends. While alienation and hostility are traits not unknown to Duke, they do seem to be less common and less intense than at most major national law schools.

Professionalization

The core of the Duke law curriculum for professional students is not distinctive in its content. The six basic first-year required courses are found in all law curricula. Most Duke law students elect in upperclass years the same large standard courses that law students elsewhere elect.

This standardization of law curricula is responsive to standardized student expectations. Law students everywhere tend to approach the discipline as a body of rules; as lawyers, they seek to know the rules applicable to the most familiar transactions and events. This view of the law is not wrong, but it is misleadingly incomplete. Legal rules are countless; many are subject to frequent change; they conflict; and their words often conceal more meaning than they reveal. Lawyers are people who understand and influence the ways in which elusive rules work in the minds of officials who must enforce them. Their discipline is thus more than a mass of data to be assimilated; it is an activity which requires judgment and gift of expression as well as information.

For this reason, wise law students everywhere concentrate on the exercise and development of basic communication skills: reading, writing, speaking, and listening. The teaching methods employed at Duke in the core curriculum are, like those employed elsewhere, intended to afford ample opportunities for such self-development.

In recent decades, however, there has been growing concern in the legal profession about the adequacy of traditional skills teaching. In part, this concern reflects impatience with the inability of any academic program to develop in adult students some of the habits and traits that make professional lawyers effective. At the same time, this concern has been partly evoked by a growing gulf between academic law and professional practice which results from what may be described as the academization of law and other professional faculties. Law faculties are now often more closely connected in their professional identities with the academic profession than with the legal profession. This development has a number of consequences, many of them surely positive; but a negative one is a possible diminution in the utility of the faculty and program in the students' pursuit of general or specific professional aims. Duke has sought to retain an emphasis on training students for professional work in several ways, some of which may be distinctive.

First, the Duke law faculty has striven to maintain a wide range of scholarly interests in fields of law which are also of interest to students with professional aspirations. Although a relatively small faculty, Duke is particularly well-represented among the leading national scholars in such fields as business organizations, taxation, real estate finance, intellectual property, civil procedure, criminal procedure, and economic regulation. There may be some cost to this in that the Duke law faculty has fewer scholars devoted to the study of constitutional law and legal theory than do some other faculties of comparable size. Yet no one familiar with either of these two fields can deny that the contributions of the Duke law faculty to them is substantial, surpassed by few faculties.

Second, the Law School at Duke has emphasized in its entry-level recruiting of faculty the importance of significant professional experience as a lawyer. Judicial clerkships, for example, are regarded by the Duke faculty as an excellent beginning of a professional career in law, and one to be sought by many Duke law graduates, but usually not as a sufficient qualification for faculty appointment. The last five professors tenured at Duke had significant professional experience, one as a public defender, one as a lawyer in a program of legal services for the poor, one in a small firm specializing in environmental litigation, one as an appellate advocate for the United States Department of Justice, and one as a tax lawyer in a major private firm. Such persons can perhaps be expected to identify more readily with the career aims of students than can faculty who quickly rejected the practice of law as a career for themselves.

Third, the Duke law faculty has made an uncommon investment of energy in the development of the professional skills of its first-year students. This commitment is reflected in the intensive tutorial writing program which demands an exceptionally large effort on the part of students as well as teachers, and in the first-year course in professional advocacy, which aims to sensitize students to some of the ethical issues of advocacy and to provide experience in that role.

Fourth, Duke has developed a distinctive clinical program. For the most part, its program of clinical training depends on simulation; only in the areas of child advocacy and criminal defense are there opportunities for hands-on experience, although an effort is



now being made to develop real-case training in the area of commercial arbitration and dispute resolution. While in some ways limiting, the emphasis on simulation has enabled the school to draw into its clinical program a very distinctive adjunct faculty teaching an array of clinical courses more varied than those available elsewhere.

Among the clinical seminars and courses offered at Duke in recent years have been Antitrust Litigation, Business Planning, Child Advocacy, Collective Bargaining, Commercial Arbitration, Commercial Practice, Criminal Practice, Entertainment Law, Estate Planning, Federal Appellate Practice, Federal Civil Rights, Forensic Psychiatry, Habeas Corpus and Criminal Appeals, International Business Transactions with Japan, Land Use Planning, Negotiation, Professional Malpractice, and Professional Responsibility. Some of the instruction is provided by regular faculty, but much of it is provided by distinguished lawyers and judges selected by the faculty and working with its Clinical Studies Committee. Instruction is scheduled to accommodate some who come long distances to participate. Thus, several of the most distinguished members of the American judiciary teach regularly at Duke, including five who sit on the United States Courts of Appeals. These persons are all eminently able and willing to share their professional skills and judgment.

An additional feature of the Duke program of professionalization is the *Alaska Law Review*, a journal edited and substantially written by Duke law students for the lawyers of Alaska and funded by the Alaska Bar Association. Materials published in this journal are shaped by conversations between the senior editors and lawyers, judges, and legislators in Alaska which are held on the annual trip of the senior student staff to that state.

Another important feature of any professional law school's program for its students is the relationship it maintains with its alumni. As noted, Duke law alumni are the most dispersed law alumni body. This is an advantage to the school in using its alumni to recruit and evaluate admissions candidates; several hundred alumni now engage in that work. In addition, the law alumni are organized to provide placement counseling and assistance in many areas of practice and locations. Local Duke law alumni organizations are now active (or, in a few cases, forming) in Atlanta, Baltimore, Birmingham, Boston, Charlotte, Chicago, Cleveland, Columbia, Columbus, Dallas, Denver, Fort Lauderdale, Greensboro, Greenville (SC), Hartford, Houston, Jacksonville, Kansas City, Los Angeles, Miami, New York, Newport Beach, Palm Beach, Philadelphia, Phoenix, Pittsburgh, Raleigh, Richmond, St. Louis, Salt Lake City, San Diego, San Francisco, Seattle, Tampa, Washington, and Winston-Salem. Many of these groups are small in membership, but the meetings are often well-attended, and serve to continue the ties of alumni and school through the decades and despite the distance.

In light of these features of its program, it is fair to say that the utility of the school to most persons seeking to develop themselves as legal professionals is not surpassed by that of any other school. While Duke, no more than any academic program in law, cannot warrant the professional competence of all its graduates, it has not forgotten the immediate aims of its professional law students and affords ample opportunities for its students to enhance the basic skills and to develop the appropriate values needed for effective professional work in law. It is for these reasons, and because of the very high quality of the students attracted to Duke, that the placement opportunities are so strong.

Intellectual Isolation and Integration

This commitment to the professional aims of its students is not belied by the school's equally strong commitment to unify its students' professional learning with the broadest dimensions of knowledge about human affairs and institutions. It is a widely shared impulse of law students to seek training rather than education, to exclude from their vision all learning save that which can be applied on the job on the morrow. Intellectual parochialism is, however, often a mark of the mediocre, unimaginative lawyer, and every good law school is at pains to open the minds of its students to the broader implica-

tions and consequences of law. Students who are narrowly careerist in their aims in law school can do enduring harm to themselves.

Thus Duke warmly encourages joint studies which link law study to other insights into the human condition. The Law School early established the first and leading journal of interdisciplinary legal studies. The Duke law faculty has more joint appointments than any law faculty, regardless of size. More Duke law students are pursuing joint degrees than are doing so at any other law school, again regardless of size. In these respects, Duke is very much a *university* law school.

Among the professors holding secondary joint appointments in the Law School are persons whose primary intellectual attainments and interests are in economics, English, history, philosophy, political science, psychology, psychiatry, and religion. The group includes several senior persons of extraordinary attainment. Illustrative of the strength this gives to the curriculum is the course on constitutional history, taught by a regular member of the faculty who is an eminent scholar of the Constitutional Convention of 1787, jointly with two historians, one the preeminent historian of the Reconstruction and the other the preeminent historian of the New Deal. Likewise, students pursuing an interest in legal theory have access not only to a noted scholar of jurisprudence, and to younger scholars whose primary interests are the application of feminist social and political theory to family law or the ethical and philosophical underpinnings of environmental law, but also to a noted philosopher of law and legal reasoning and a heralded literary theorist who is applying literary theory to law.

In developing this joint-appointment faculty, the Law School has not limited itself to relations with professors teaching in other fields at Duke, but has sought out scholars at other universities in North Carolina. In addition, there are several members of the law faculty holding secondary appointments in other fields such as medicine and public policy science, as well as many others whose primary intellectual interests span law and other fields.

The key to joint studies for law students at Duke in recent years has been the summer-entering program. Students commencing their studies in early June are enabled to complete two of the six major first-year courses by mid-August. They are then free to enrich their first-year Law School experience with broad exposure to another field, particularly economics, English, history, philosophy, or political science, so that in one year they will have completed half of the Graduate School requirements for a Master of Arts degree. Both degrees can be completed within the remaining two academic years with a slight overload. This feature of the Duke program is unique. It is not offered as a means of elevating the professional salability of the school's graduates, but as a means of preserving in professionals a life of the mind, and of promoting a broader view of the discipline of law which may over the longer term enhance one's professional judgment.

Another distinctive feature of the Law School which unites it with other fields is the Private Adjudication Center. The Center is a nonprofit corporation established in 1983 and controlled by members of the law faculty. It provides dispute resolution services to litigants in the United States District Court for the Middle District of North Carolina and for commercial disputants throughout the United States. In its services activity, the Center establishes a tie to business leadership and to faculty in the Graduate School of Business. The Center is also a research center of growing importance; it has received a number of substantial research grants, including a recent one to study dispute resolution techniques for claims of medical malpractice. In its research role, it maintains ties to social scientists of all stripes, and also engages the talents of law students skilled or interested in social science methodology. Because the structure of the Center combines service with research, it is possible to conduct research on real matters under controlled circumstances; this makes the Center the first genuine laboratory for the application of social science methods to the evaluation of legal institutions and procedure. The Center also maintains a small program of continuing education for litigators, and is now striving to establish a clinical program for Duke law students. While the Center is new and its future there-

fore still uncertain, its early growth indicates that it is likely to become an important feature of the school and its program for students.

Finally, an unusual minor feature of Duke is the degree program for the Master of Legal Studies. This is a one-year program that serves to initiate the student to law study; it is not essentially different from the usual first year of the professional degree program. Only a few mature students having established careers in other fields are admitted to this program. Such students are expected to enrich the professional and intellectual community of the school with the diversity of their experience. The program symbolizes the openness of the Law School and the willingness of the faculty to encourage interests in law by persons outside the legal profession.

This network of ties makes Duke as thoroughly integrated in its intellectual life as any American law school. The pursuit of professional aims at Duke need not be constricted by intellectual parochialism, even if there can be no assurance that every student will exploit fully the opportunities for enlarged vision that the Duke Law curriculum affords.

The International Dimension

The Law School is an institution of considerable international proportion. In part, this simply reflects the interests of the present regular law faculty, which are as international as those of any law faculty. Thus, among the twenty-nine persons holding full-time professional appointments primarily in law, are scholars whose *primary* interests include the law of the sea, taxation of international trade, comparative administrative law, comparative public law of ethnic group relations, and comparative and international insurance law. Several others regularly study the comparative dimensions of such fields as securities regulation and intellectual property. Still others maintain international careers as experts in fields of American law; thus Duke law faculty have taught or lectured to international audiences in as many as forty countries in the most recent five years. The extent of this international interest of the faculty is distinctive, although not unique.

Because of this high level of faculty interest, the Law School has been especially receptive to international faculty visitors. Regular ties have now been established with professors who are recurring visitors from Brussels, Oxford, and Tokyo, as well as with a recent Duke law alumnus beginning in 1988 his career as a law professor in China. In addition, recent years have brought visitors from Alberta, Berne, Dalhousie, Gujarat, Hamburg, Kyoto, Monash, Munster, Natal, Otago, Queen's, Osaka Prefecture, Peoples', Ramat-Gan, Sydney, Tessaionika, Tsuru, and York. Despite the congestion of the law building, the school has tried to welcome international scholars and, when language facility permits, to bring them into contact with Duke law students as well as faculty. In this way, the curriculum is enriched each year with a few special offerings, sometimes narrow in focus, but often offering unusual insights into the nature and uses of law.

In addition to this influx of international faculty, Duke has also reached out to international students. About fifteen foreign lawyers are admitted each year to the program leading to the Master of Laws degree. On rare occasion, one of these students is encouraged to remain for a doctorate. Duke is distinctive in the degree to which these students are integrated into the community of American students. There is no special curriculum for international students, and each foreign lawyer is required to take at least one of the regular first-year courses, often in one of the smaller sections where social and professional interaction is most likely to occur.

In recent years, each entering class of J.D. candidates has included a small number of international students, most of them from the People's Republic of China. This reflects a special initiative by the Law School to assist in the development of the legal system and legal profession of China, an important goal of the present leadership of that country. Duke has established ties with the most important law faculties in China, who assist in the selection and recruitment of Duke's students from China; these students are partly supported with generous help from American law firms recruited for its program by the

Law School. Duke's students from China will be returning to positions of leadership in that country, the school's contribution to what may be the most momentous development in law in this century. This distinctive program has made the Law School increasingly attractive also to students from Korea, Japan, and Taiwan; in each of the most recent years, there have been more than twenty students in the school from the Far East. This development seems also to have stimulated welcome interest in Duke on the part of Asian-Americans, a minority not previously numerous at the Law School, but now growing.

In 1986, the Law School joined with the University of Copenhagen to establish a distinctive four-week residential summer school in Denmark, named the Institute of Transnational Law, for foreign and American students interested in comparative and international law. In 1987, the program moved to Holte, a suburb of Copenhagen, to a facility suitable for housing both students and faculty. The curriculum of this program is conducted in English, half by regular Duke faculty, and half by faculty members from foreign universities, primarily from northern Europe. The school aims to keep the students equally divided between North Americans and international, the latter including not only Europeans but occasional students from the Middle East and Japan. In 1988 the program became a permanent part of the Duke Law School program, and beginning with the class entering in the summer of 1988, is a compulsory component of the J.D./LL.M. curriculum. Students attending the Institute may obtain up to six semester-hours of credit.

In 1985, the law faculty established a unique joint degree program internal to the Law School which aims to encourage students to exploit this distinctive international dimension of the school. Along with the joint degree programs with the Graduate School, the program leading to the Master of Laws (Foreign and International Law) depends on summer entrance to law study to enable students to complete a second degree in the standard three academic years supplemented by the one summer semester plus a month in the program at Holte or equivalent additional work. Students in this program devote a substantial part of their first year to the study of foreign and international law, thus materially broadening their perspective on the standard first-year law material. Like the joint degree program offered with the Graduate School, this degree program is not presented as an assurance of advantage in the pursuit of a particular career in law, but as a means to broadened perspective and deepened capacity for judgment.

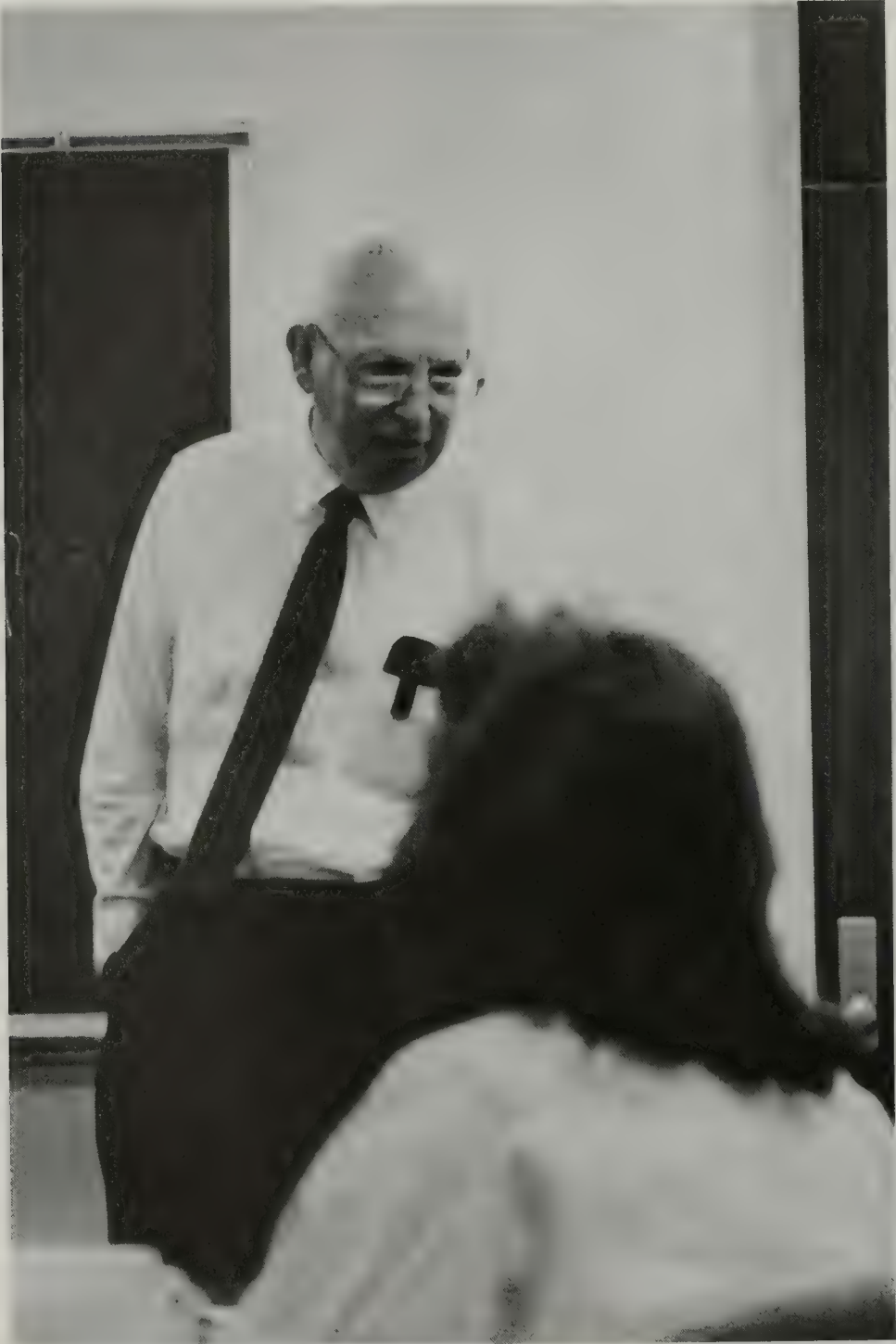
Conclusions

In 1986, the Law School was reviewed by a distinguished committee serving the University Board of Trustees, and also by an eminent team appointed by the American Bar Association and the Association of American Law Schools. All of these inspectors of the school commented adversely on the plant as being too modest in appearance and too small for the volume of activity housed within. All also commented especially on the three secondary faculties of the Law School: the adjunct clinical faculty of lawyers and judges, the joint faculty of scholars primarily working in other disciplines, and the international visiting faculty. The shared comment was that each of these groups was extraordinary in what it was able to bring to Duke law students, and each was wisely balanced by the presence of the others. At least one observer noted the synergistic effect—the Law School is more than the sum of its parts.

The assembly of these secondary faculties is itself an unusual attainment of the regular faculty. What their collective presence manifests is the self-confidence of an institution reaching out to the legal profession, to the academic profession, and to the international legal community for the best that these constituencies have to offer to those engaged in the study and illumination of law. Together with the supportive student environment, and a talented and dedicated faculty willing to innovate, they provide a truly distinctive opportunity for the study of law.



Law Faculty



Presented here are faculty holding academic appointments in the Law School extending beyond one year.

Jean Taylor Adams, Senior Lecturer in Law

B.A. 1972, M.Ed. 1975, J.D. 1979, Duke University. Ms. Adams spent her early years in the Philadelphia area. Prior to entering law school, she was employed by Duke University in the estate planning division of the Development Office and as an admissions counselor. She compiled an unusually distinguished academic record in law school, where she also served as editor-in-chief of the *Duke Law Journal*. She began her professional career in law in 1980 at Duke, teaching in the area of estate planning, taxation, and, more recently, property. She also served as associate dean from 1983 to 1986.



Patrick S. Atiyah, Visiting Professor of Law

B.A. 1953, B.C.L. 1954, M.A. 1957, D.C.L. 1974, Oxford University. A native of Great Britain, Professor Atiyah has pursued an academic career that has taken him successively to the University of Khartoum, the Australian National University, the University of Warwick, and back to Oxford, where he is presently professor of English law. He has also taught at Harvard. His numerous books have won wide critical acclaim; the most recent, *Law and Modern Society*, was published in 1983. He returns for his fourth visit to Duke in the spring of 1989 to teach Comparative Law: The English and American Traditions.



Katharine Tiffany Bartlett, Professor of Law

B.A. 1968, Wheaton College; M.A. 1969, Harvard University; J.D. 1975, University of California, Berkeley. A native of Connecticut, Professor Bartlett served for three years as a secondary school teacher in that state before entering law school. She commenced her legal career with a judicial clerkship in the Supreme Court of California. From 1976 to 1979, she worked as a staff attorney at the Legal Aid Society of Alameda County in Oakland, California, concentrating on law reform and major impact litigation. She began teaching at Duke in 1979. Her special areas of interest include child advocacy, family law, and feminist legal theory.



Lawrence G. Baxter, Professor of Law

B.Comm. 1973, LL.B. 1975, Ph.D. 1985, University of Natal; LL.B. 1977, Dip.Leg.Stud. 1978, Cambridge University. A native of South Africa, Professor Baxter supplemented his academic studies in Natal and Cambridge with a two-year period of clerkship leading to admission as an attorney, and a brief period of professional practice before taking an appointment in 1978 at the University of Natal. In 1982 he was appointed to a chair of law at the same university, and in 1984 was also a visiting professor at the University of Cape Town. He has served as an adjudicator on the Natal Midlands Licensing Appeal Board, is a consultant to the Administrative Conference of the United States, and has published a number of works in administrative, constitutional, and comparative law. Among these is a treatise, *Administrative Law*, published in 1984. He has been teaching at Duke since 1985, and will be a visiting fellow at Wolfson College, Cambridge, during part of 1988.



Sara Sun Beale, Professor of Law

B.A. 1971, J.D. 1974, University of Michigan. A native of Toledo, Ohio, Professor Beale's experience includes a judicial clerkship on the United States Court of Appeals, as well as a year in private practice in Detroit, Michigan. In 1976 she joined the United States Department of Justice, where she served one year in the Office of Legal Counsel, and two years in the Office of the Solicitor General. She began her teaching career at Duke in 1979 and is the coauthor of *Grand Jury Law and Practice* (1986). Her principal academic interests are in the field of criminal law and procedure.



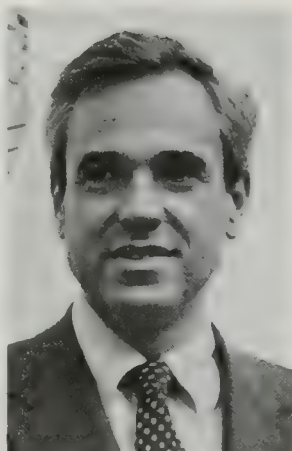
Herbert L. Bernstein, Professor of Law

LL.B. 1953, Dr. jur. 1962, Hamburg University, Germany; J.D. 1967, University of Michigan. A native of Germany, Professor Bernstein practiced as a junior lawyer until 1958 and as a regular member of the bar thereafter. Simultaneously, he was a research and teaching assistant at Hamburg University from 1956 to 1960. Since 1958 he has also been affiliated with the Max-Planck Institute of Foreign and Private International Law. He taught at the University of California from 1967 to 1971; then returned to Hamburg University as professor of law. After a previous visit, he came to Duke University in 1984. His teaching includes contracts, comparative law, and insurance. He is the author of numerous books and articles on diverse subjects in the fields of international law, conflict of laws, insurance, and business law. He is on leave for the academic year 1988-89.



H. Keith H. Brodie, James B. Duke Professor of Psychiatry and Law

A.B. 1961, Princeton University; M.D. 1965, Columbia University. Dr. Brodie served at hospitals in New Orleans and New York City before becoming a clinical associate with the National Institute of Mental Health in 1968. In 1970, he joined the medical faculty of Stanford University. He was awarded a first prize in 1971 for research by the American Psychological Association. Dr. Brodie is a member of the Institute of Medicine of the National Academy of Sciences and he has chaired IOM's Board of Mental Health and Behavioral Medicine. He came to Duke in 1974 as professor and chairman of the Department of Psychiatry and director of Psychiatric Services at Duke University Medical Center. He has also served as president of the American Psychiatric Association. His most recent book is *Modern Clinical Psychiatry*, published in 1982. He was first appointed to the law faculty in 1982. He presently serves as president of Duke University.



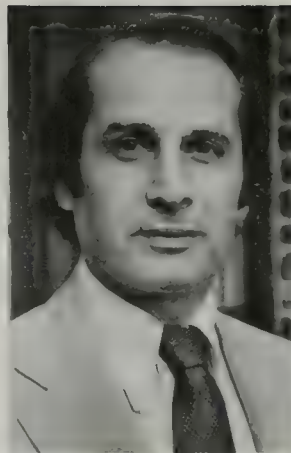
Paul D. Carrington, Professor of Law

B.A. 1952, University of Texas; LL.B. 1955, Harvard University. Professor Carrington is a native of Dallas, Texas. His professional experience includes a brief stint in private practice in Dallas and in a military law office, as well as occasional work for the American Civil Liberties Union and the American Association of University Professors. Since his teaching career began in 1957, he has taught at more than a dozen law schools, before serving as professor of law and dean at Duke from 1978 to 1988. He has been active in judicial law reform efforts, particularly in regard to appellate courts and procedure. He has published in the fields of civil procedure, education law, and legal education. He teaches civil procedure and is reporter for the Committee of the Judicial Conference of the United States which advises the Conference and the Supreme Court on changes in the Federal Rules of Civil Procedure. He will be on leave for the academic year 1988-89.



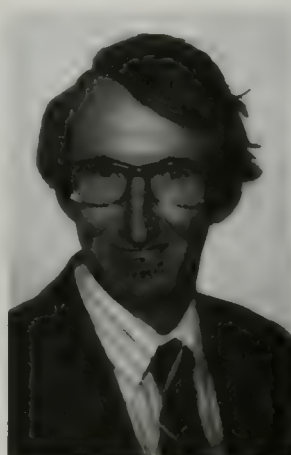
George C. Christie, James B. Duke Professor of Law

A.B. 1955, J.D. 1957, Columbia University; S.J.D. 1966, Harvard University. A native of New York City, Professor Christie was editor-in-chief of the *Columbia Law Review*. He commenced his legal career with private practice in Washington, D.C. In 1960-61, he was a Ford Fellow at Harvard Law School; and in 1961-62, he was a Fulbright Scholar at Cambridge University, where he earned a Diploma in International Law. He then joined the law faculty of the University of Minnesota, where he taught for almost four years. In 1966, he returned to Washington to serve as Assistant General Counsel for the Near East and South Asia of the Agency for International Development before coming in 1967 to Duke. His chief academic interests are in the areas of torts and jurisprudence, in both of which he has published widely. He is the editor of a casebook in jurisprudence published in 1973 and one on torts published in 1983. His monograph, *Law, Norms and Authority*, was published in 1982. He has been a visiting professor at the Universities of Michigan, Florida, Otago in New Zealand, Witwatersrand in South Africa, and Fudan University in Shanghai, and a fellow of the National Humanities Center.



James D. Cox, Professor of Law

B.S. 1966, Arizona State University; J.D. 1969, University of California, Hastings College of the Law; LL.M. 1971, Harvard University. Professor Cox is a native of Ellinwood, Kansas. He entered law teaching as a teaching fellow at Boston University, and has since taught at the University of San Francisco, Stanford University, and the University of California, Hastings College of the Law, before coming to Duke in 1979. He has focused his writing and teaching in the areas of corporate and securities law. Professor Cox is the author of a book on the utilization of financial information in the regulation of public corporations.



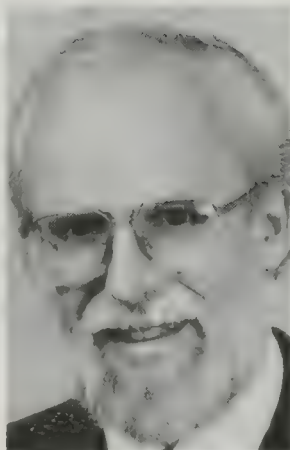
Jerome M. Culp, Jr., Associate Professor of Law

A.B. 1972, University of Chicago; A.M. 1974, J.D. 1978, Harvard University. Professor Culp is a native of Clarksville, Pennsylvania. While in law school he served as senior editor of the *Harvard Civil Rights-Civil Liberties Law Review*. His experience includes a research fellowship with the Rockefeller Foundation and a judicial clerkship in the U.S. Court of Appeals. He came to Duke from Rutgers in 1985, and in 1987 was a Distinguished Scholar at the Joint Center for Political Studies in Washington, D.C. His principal work to date is in the area of employment discrimination and economic analysis of law. He teaches torts and employment discrimination.



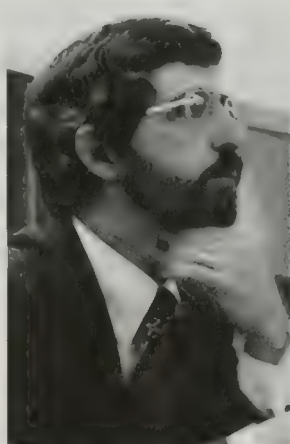
Richard A. Danner, Professor of Legal Research

B.A. 1969, M.S. 1975, J.D. 1979, University of Wisconsin-Madison. Professor Danner is a native of Wisconsin, who served as environmental law librarian at the University of Wisconsin-Madison, prior to coming to Duke as associate law librarian in 1979. He became director of the Law Library in 1981. He teaches a seminar in legislation, as well as legal research and writing. He has published articles in journals of law, law librarianship, and library science; his book, *Legal Research in Wisconsin*, was published in 1980. Since 1984, he has been editor of the American Association of Law Libraries' *Law Library Journal*. He is active in the affairs of AALL, AALS, and served in 1985-86 as president of the southeastern chapter of AALL. He is vice-president/president-elect of AALL.



Walter E. Dellinger III, Professor of Law

A.B. 1963, University of North Carolina; LL.B. 1966, Yale University. Professor Dellinger is a native of Charlotte, North Carolina. He taught political and civil rights at the University of Mississippi from 1966 to 1968. In 1968-69, he served as a judicial clerk in the Supreme Court of the United States. He joined the Duke law faculty in 1969, serving as associate dean from 1974 to 1976 and as acting dean from 1976 to 1978. He has also taught at the University of Southern California, the University of Michigan, and the Catholic University of Leuven, Belgium. He teaches constitutional law and history, and in 1988-89 will be on leave as a fellow of the National Humanities Center.



Deborah A. DeMott, Professor of Law

B.A. 1970, Swarthmore College; J.D. 1973, New York University. Professor DeMott spent her early years in DuBois, Pennsylvania. She served as articles editor of the *New York University Law Review*. She began her professional career with a judicial clerkship in a federal court in New York City, and later practiced with a large law firm in that city, until she joined the Duke law faculty in 1975. She has also taught at the University of Texas and at the Hastings College of Law of the University of California and in 1986 was a Fulbright Senior Scholar at Sydney and Monash Universities in Australia. She is a member of the Art Law Drafting Committee of the North Carolina General Statutes Commission. Her treatise, *Shareholder Derivative Actions*, was published in 1987. Her other writing concerns corporate law, securities regulation and fiduciary obligation.



Robinson O. Everett, Professor of Law

A.B. 1947, J.D. 1950, Harvard University; LL.M. 1959, Duke University. Professor Everett is a native of Durham, North Carolina. He served for several years as a legal officer in the Air Force and as a commissioner of the United States Court of Military Appeals. He returned to Durham to enter a general practice, which he continued until 1980 when he ascended to the bench of the United States Court of Military Appeals as chief judge. From 1961 to 1964, he served as counsel to the Subcommittee on Constitutional Rights of the United States Senate Judiciary Committee. He has been active in the affairs of the North Carolina Bar and of the community of Durham. He has long served as a commissioner on Uniform State Laws and has been active in various law reform efforts. He has published on many legal topics, most notably military justice and local government law. His teaching at Duke began as early as 1950. He was elected to regular membership on the faculty in 1967. He is on part-time leave.



Peter G. Fish, Professor of Political Science and Law

A.B. 1960, Princeton University; A.M. 1965, Ph.D. 1968, The Johns Hopkins University. Professor Fish has served as guest scholar at the Brookings Institution and taught at Oberlin and Princeton before coming to Duke in 1969. He is author of *The Politics of Federal Judicial Administration* (1973) and *The Office of the Chief Justice* (1984). From 1977-79 Professor Fish served as a lay member of the United States Circuit Judge Nomination Commission, Panel for the Fourth Circuit. He teaches a seminar on the politics of judicial administration and a research tutorial on the development of the United States Courts of the Fourth Circuit: 1789-1958.



Stanley E. Fish, Professor of English and Law

B.A. 1959, University of Pennsylvania; M.A. 1960, Ph.D. 1962, Yale University. Professor Fish taught at the University of California, the University of Southern California, and The Johns Hopkins University before coming to Duke in 1985. His principal field has been the study of Milton; this interest evolved to produce important work on literary theory and his widely noted 1980 book, *Is There A Text in This Class?* Most recently he contributed to the application of literary theory to law and has written for legal publications. He teaches a seminar on interpretive theory which is presented to students of the humanities as well as law.



John Hope Franklin, Professor of Legal History

A.B. 1935, Fisk University; M.A. 1936, Ph.D. 1941, Harvard University. A native of Oklahoma, Professor Franklin taught at Fisk University, North Carolina Central University, Howard University, Brooklyn College, and the University of Chicago, where he was the John Matthews Manly Distinguished Service Professor, before coming to Duke in 1982 as the James B. Duke Professor of History. He is now emeritus in history and continues his teaching in the Law School. He has served as president of several scholarly organizations, including the United Chapters of Phi Beta Kappa and the American Historical Association; as Pitt Professor of American History and Institutions at Cambridge University; and as a member of many national commissions and delegations, including the National Council on the Humanities and UNESCO. He has published several books, among which are *The Free Negro in North Carolina* (1943), *From Slavery to Freedom: A History of Negro Americans* (1947), *Reconstruction after the Civil War* (1961), *The Emancipation Proclamation* (1963), *A Southern Odyssey: Travelers in the Antebellum North* (1976), *Racial Equality in America* (1976), and *George Washington Williams: A Biography* (1985) in addition to numerous articles in professional journals.



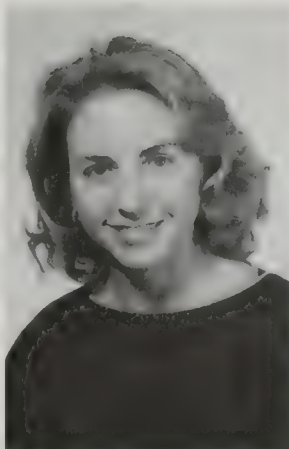
Koichiro Fujikura, Visiting Professor of Law

B.A. 1957, Doshisha University; B.A. 1961, Amherst College; LL.M. 1962, Northwestern University; LL.M. 1963, Harvard University. Professor Fujikura returned to Japan after his four years of study in the United States, where he joined the faculty of Doshisha, serving as dean of the law faculty there before moving to the University of Tokyo in 1981; he remains professor of law at Tokyo. He has also taught at California, Harvard, and Hawaii. Among his writings is a book published in English, *Environmental Law in Japan* (1981). He makes his second visit to Duke in the fall of 1988 to teach Japanese Environmental Law and Dispute Resolution. It is anticipated that his instruction will be presented again in the fall of 1989.



Pamela Gann, Professor of Law

B.A. 1970, University of North Carolina; J.D. 1973, Duke University. A native of Monroe, North Carolina, Professor Gann was articles editor of the *Duke Law Journal*. She practiced with private firms in Atlanta and Charlotte before returning to Duke to teach in 1975. She has also taught at Washington University and the Universities of Michigan, Virginia, Colorado, and San Diego. She is the coeditor of a 1988 casebook on corporate taxation. Her writing is primarily in the areas of taxation and international investment. In 1984, her work was supported by the Council on Foreign Relations. She begins service as dean of the Law School in 1988.



Gao Xi-Qing, *Visiting Assistant Professor of Law*

B.A. 1978, M.A., 1981, Beijing Institute of Foreign Trade; J.D. 1986, Duke University. A native of Xian, China, Mr. Gao served as a lecturer in international trade law in Beijing and as a law clerk in the United States before entering the Law School in 1983. Since graduation, he has practiced with a large New York law firm and returned in 1988 to the Beijing Institute of Foreign Trade as an assistant professor of law. In the spring of 1988 he taught a seminar in International Trade Transactions with China at Duke; it is anticipated that his instruction will be presented again in the spring of 1990.



Claire M. Germain, *Senior Lecturer in Comparative Law and Legal Research*

B.A. 1971, LL.B. 1974, University of Paris; M.C.L. 1975, Louisiana State University; M.L.L. 1977, University of Denver. A native of France, Ms. Germain has served as a research associate in French and German law at Louisiana State University, as a research assistant at the Organization for Economic Cooperation and Development in Paris, and as a guest librarian and research fellow at the Max-Planck Institute for Foreign and Private International Law in Hamburg, West Germany. At Duke since 1977, she is now the assistant librarian. Her book, *Guide to Foreign Legal Materials: French*, was published in 1985. She frequently writes on law librarianship and foreign and comparative law. She teaches legal research and a seminar in civil law.



Martin P. Golding, *Professor of Philosophy and Law*

B.A. 1949, M.A. 1952, University of California, Los Angeles; Ph.D. 1959, Columbia University. A native of New York City, Professor Golding taught at Columbia University from 1957 to 1970 and at the John Jay College of Criminal Justice of the City University of New York from 1970 to 1976 before coming to Duke in 1976 as professor and chairman of the Department of Philosophy, where he remains as professor. He has also taught at New York University, Bar-Ilan University in Israel, and the Universities of California (both Berkeley and Los Angeles), Southern California, and Colorado. His writing includes three books, *The Nature of Law* (1966), *Philosophy of Law* (1975), and *Legal Reasoning* (1984), and numerous articles on jurisprudence and ethics. Professor Golding was Senior Visiting Fulbright Lecturer in Australia and has been a fellow of the National Humanities Center.



Paul H. Haagen, Associate Professor of Law

B.A. 1972, Haverford College; B.A. 1974, M.A. 1976, Oxford; M.A. 1976, Ph.D. 1986, Princeton; J.D. 1982, Yale. Professor Haagen was born in Lancaster, Pennsylvania and raised in Connecticut. After graduating from college, he studied history first at Oxford as a Rhodes Scholar, and later at Princeton, where he also taught. In law school, he was an editor of *Yale Studies in World Public Order* and editor-in-chief of the *Yale Law and Policy Review*. Since law school, he has clerked on the United States Court of Appeals and then practiced law in Philadelphia for two years before coming to Duke in 1985. His principal academic interests are legal history and international law.



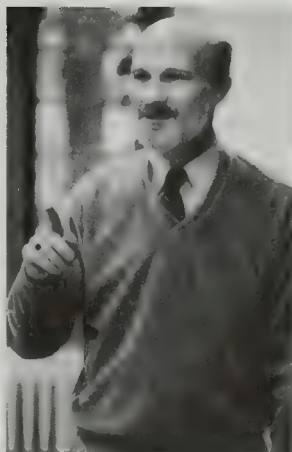
Guy Haarscher, Visiting Professor of Law

J.D. 1971; Ph.D. 1977, Université Libre de Bruxelles. Professor Haarscher is a native of Brussels and has lived and worked in that city all of his life. He is professor of law and director of the Center of the Philosophy of Law at his university. He has also taught at the Australian National University. His most recent book is *Philosophie des Droits de L'homme* (1987). He made his second visit to Duke in the fall of 1987 to teach his course, Law and Political Philosophy. It is anticipated that his instruction will again be presented in the fall of 1989.



Stanley Hauerwas, Professor of Divinity and Law

B.A. 1962, Southwestern University; B.D. 1965, M.A., M.Phil., Ph.D. 1968, Yale University. Prior to coming to Duke Divinity School in 1984, Professor Hauerwas taught at Augustana College from 1968 to 1970 and at the University of Notre Dame from 1970 to 1984. While at Notre Dame he was a visiting professor at a number of other American universities. At Duke, Professor Hauerwas is a professor in the Divinity School and director of graduate studies in the Department of Religion. He begins his association with the Law School in 1988. His primary research interests are in the field of ethics.



Clark C. Havighurst, *William Neal Reynolds Professor of Law*

A.B. 1955, Princeton University; J.D. 1958, Northwestern University. Professor Havighurst is a native of Evanston, Illinois. He spent two years in military service, one year as a research associate at Duke, and three years in private law practice in New York City before beginning his teaching career at Duke in 1964. Professor Havighurst was for five years the editor of *Law and Contemporary Problems*. In addition to teaching antitrust law, he has a special academic interest in the field of health care law and in national health policy. His book, *Deregulating the Health Care Industry*, was published in 1982, and his casebook, *Health Care Law and Policy*, appeared in 1988. Professor Havighurst is director of the Law School's Program on Legal Issues in Health Care, and he has served as scholar in residence at, and is a member of, the Institute of Medicine of the National Academy of Sciences. He has also been a resident consultant to the Federal Trade Commission in Washington, D.C., and is an adjunct scholar in Law and Health Policy of the American Enterprise Institute. He has also taught at Stanford, Northwestern, Michigan, and William and Mary.



Cynthia B. Herrup, *Associate Professor of History and Law*

B.S.J. 1972, Northwestern University; M.A. 1975, Loyola University (Chicago); Ph.D. 1982, Northwestern University. Professor Herrup is a native of Miami, Florida. Prior to coming to the Department of History at Duke in 1984, Professor Herrup taught for three years at the University of Michigan, Ann Arbor. From 1985 to 1988 Professor Herrup had a concurrent appointment at Duke Law School as lecturer in legal history, teaching courses in the history of English criminal law. In 1988, Professor Herrup was appointed associate professor of history and law in the Law School. Her principal research interests are in the area of criminal law in preindustrial societies and the social and intellectual history of ideas of crime and punishment. She will continue to teach history of English criminal law.



Donald L. Horowitz, *Charles S. Murphy Professor of Law*

A.B. 1959, LL.B. 1961, Syracuse University; LL.M. 1962, M.A. 1965, Ph.D. 1967, Harvard University. A native of New York City, Professor Horowitz began his professional career as a judicial clerk in the United States District Court. With the exception of a stint as a government lawyer, he has primarily been engaged in research at the Harvard University Center for International Affairs, the Council on Foreign Relations, the Brookings Institution, and the Smithsonian Institution. A recipient of a grant from the Guggenheim Foundation for work in ethnic relations, Professor Horowitz has published several books. Among them are *The Jurocracy*, a book about government lawyers, and *The Courts and Social Policy*, for which he was awarded the Louis Brownlow Prize of the National Academy of Public Administration in 1977. His most recent book is *Ethnic Groups in Conflict* (1985). Professor Horowitz came to Duke in 1981 and has served as a fellow of the National Humanities Center. In the spring of 1988, he was a visiting fellow at Wolfson College, Cambridge. In the fall of 1988, he will be a visiting professor at the University of Chicago Law School.



David L. Lange, Professor of Law

B.S. 1960, LL.B. 1964, University of Illinois. Professor Lange practiced law with a Chicago firm that included media enterprises among its clients. He has also had substantial professional experience in radio, television, cable, and motion picture production, and has served as a member of the Governing Committee of the ABA Forum on the Entertainment and Sports Industries. He joined the Duke law faculty in 1971, where he has since served as general editor of *Law and Contemporary Problems* and as chairman of the Center for the Study of Communications Policy. His principal academic interests lie in the areas of intellectual property, entertainment, and communications law.



William E. Leuchtenburg, Professor of Legal History

B.A. 1943, Cornell University; M.A. 1944, Ph.D. 1951, Columbia University. Professor Leuchtenburg holds the Kenan Chair in History at the University of North Carolina and previously held the DeWitt Clinton Chair at Columbia. He has also taught at Oxford University, and previously at the Law School. His field is modern American history with emphasis on the Roosevelt era; his latest book is on the legacy of Franklin Roosevelt and its impact on American presidents from Truman to Reagan. He teaches in the area of constitutional history.



Richard C. Maxwell, Harry R. Chadwick Professor of Law

B.S.L. 1941, LL.B. 1947, University of Minnesota; LL.D. (Hon.) California Western University. Professor Maxwell is a native of Minnesota. He started his academic career at the University of North Dakota and has been a faculty member at the University of Texas and UCLA. He was counsel to the Amerada Petroleum Corporation during the early development of the Williston Basin and served for a decade as dean of the law school at UCLA, where he was also Connell Professor of Law. He has held visiting chairs at the University of Minnesota, the University of Singapore, and the University of Colorado and was Fulbright Lecturer at Queen's University, Belfast. In 1972 he was president of the Association of American Law Schools. He is an editor of the *Oil and Gas Reporter* and most of his scholarship in recent years deals with mineral law. He has published books on social legislation, real property security transactions, and oil and gas law. He joined the Duke faculty in 1979.



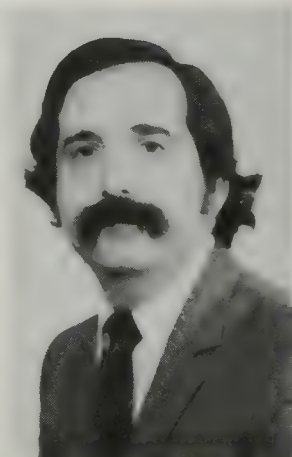
Thomas B. Metzloff, *Associate Professor of Law*

B.A. 1976, Yale College; J.D. 1979, Harvard University. Professor Metzloff is a native of Buffalo, New York. He began his professional career with a judicial clerkship on the United States Court of Appeals, followed by a clerkship with the Supreme Court of the United States. He then practiced with a private firm in Atlanta before accepting a position at Duke in 1985. He has written articles on professional malpractice. He teaches civil procedure, as well as professional responsibility and a course on professional liability, and serves as director of the Private Adjudication Center's Medical Malpractice Research Project.



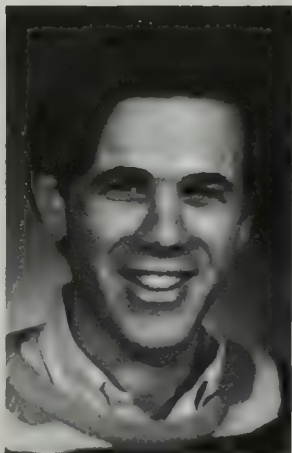
Robert P. Mosteller, *Professor of Law*

B.A. 1970, University of North Carolina at Chapel Hill; J.D. 1975, Yale University; M.P.P. 1975, Harvard University. Professor Mosteller is a native of Vale, North Carolina. After serving as a judicial clerk, he joined the District of Columbia Public Defender Service as a staff attorney. During seven years with the Public Defender Service, he was director of training and chief of the Trial Division. Professor Mosteller came to Duke in 1983, and is the coeditor of an evidence casebook and problem book published in the summer of 1988. He teaches evidence, criminal procedure, criminal litigation, and trial practice.



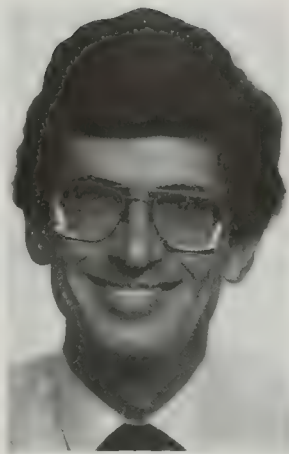
Jonathan K. Ocko, *Associate Professor of Legal History*

B.A. 1966, Trinity College; M.Phil. 1971, M.A. 1972, Ph.D. 1975, Yale University. A native of New York City, Professor Ocko taught at Clark University and Wellesley College before joining the faculty of North Carolina State University in 1977. During the academic year 1978-79, he studied law at Harvard University, where he also taught Asian law. His principal scholarly efforts have been in the field of Chinese history and law. His book, *Bureaucratic Reform in Provincial China*, was published in 1982. In 1983, he was appointed to a part-time professorial position in the Law School.



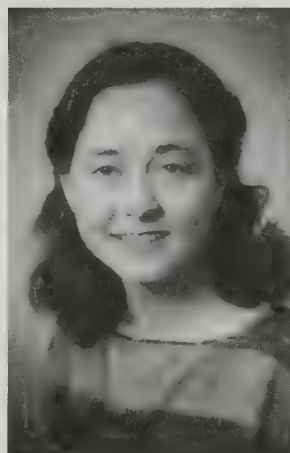
H. Jefferson Powell, *Visiting Professor of Law*

B.A. 1975, University of Wales; A.M. 1977, Duke University; M.Div. 1979, J.D. 1982, Yale University. A native of Burlington, North Carolina, Professor Powell clerked for Judge Sam J. Ervin of the Fourth Circuit Court of Appeals and served as a research associate at Yale before joining the law faculty at the University of Iowa in 1984. In 1986-87 he was a visiting associate professor at Yale. He returned to Duke in 1987 for two years to complete his doctorate in divinity. At the Law School, he teaches contracts and constitutional history.



Evelyn M. Pursley, *Senior Lecturer in Law*

B.A. 1973, M.L.S. 1975, University of Oklahoma; J.D. 1984, Duke University. A native of Oklahoma, Ms. Pursley served as a school teacher and university librarian in that state before entering law school. While at Duke she was executive editor of *Law and Contemporary Problems*. After graduating from law school, she served as a law clerk for the United States Court of Appeals. She returned to Duke in 1985 as assistant dean. She also teaches in the clinical program.



William Arneill Reppy, Jr., *Professor of Law*

A.B. 1963, J.D. 1966, Stanford University. Professor Reppy is a native of Oxnard, California. He commenced his professional career with two judicial clerkships—one in the Supreme Court of California, followed by another in the Supreme Court of the United States. He then practiced law for three years with a private firm in Los Angeles, until joining the Duke law faculty in 1971. He has also taught at the Universities of California, Michigan, Washington, and North Carolina. He is consultant to the California State Bar Association on succession law. His principal scholarly work is in the areas of marital property rights and conflict of laws. He does pro bono legal work for the humane and animal rights movements.



Horace B. Robertson, Jr., Professor of Law

B.S. 1945, U.S. Naval Academy; J.D. 1953, Georgetown University; M.S. 1968, George Washington University. Professor Robertson is a native of Kannapolis, North Carolina. After five years as a line officer in the Navy, he was assigned to law study. After achieving a distinguished record, including service as editor-in-chief of the *Georgetown Law Journal*, he returned to active duty as a judge advocate, rising ultimately to be the highest ranking legal officer in the Navy in 1975. While on active duty, he served as a member of the United States Delegation to the United Nations Law of the Sea Conference in 1958 and to the United Nations Seabeds Committee's Preparatory Session in 1973. He joined the Duke law faculty in 1976. His primary teaching interests are in the fields of international law and admiralty. He also serves as senior associate dean.



Thomas D. Rowe, Jr., Professor of Law

B.A. 1964, Yale University; M.Phil. 1967, Oxford University; J.D. 1970, Harvard University. A native of Ann Arbor, Michigan, Professor Rowe achieved preeminent academic records both as an undergraduate and as a law student; in the interim, he was also a Rhodes Scholar. He commenced his professional career as a law clerk in the Supreme Court of the United States. He served for one and one-half years as Assistant Counsel to a Subcommittee of the United States Senate and then practiced law with a private firm in Washington, D.C. He joined the Duke law faculty in 1975 and served as associate dean from 1981 to 1984. He has also taught at Georgetown and Michigan. He has written in the fields of civil procedure, judicial remedies, and constitutional law.



Joyce S. Rutledge, Senior Lecturer in Law

A.B. 1967, Goucher College; M.A. 1969, Ph.D. 1972, The Johns Hopkins University; J.D. 1981, Duke University. Ms. Rutledge was in the field of German literature before she undertook her legal training. While at Duke she was a member of the editorial board of *Law and Contemporary Problems*, and held several research assistantships. During 1981-82 she served as clerk for the U.S. Court of Appeals. Ms. Rutledge teaches legal writing, criminal law, upperclass seminars in appellate advocacy, a seminar on religion and law, and also serves as general editor of *Law and Contemporary Problems* and the *Alaska Law Review*.



Richard L. Schmalbeck, Professor of Law

A.B. 1970, J.D. 1975, University of Chicago. Professor Schmalbeck is a native of Chicago, where he began his professional career as an economist with the Illinois Housing Development Authority in 1971. In 1973, he returned to law school at the University of Chicago, where he served as associate editor of the *University of Chicago Law Review*. Following law school graduation, he practiced law briefly in Columbus, Ohio, before accepting a position in Washington in 1976 as a special assistant to the associate director of the Office of Management and Budget. In 1977, he returned to private practice with a law firm in Washington, specializing in federal income tax. He began his teaching career at Duke in 1980, where his focus is on the fields of federal taxation and law and economics.



Christopher H. Schroeder, Professor of Law

B.A. 1968, Princeton University; M.Div. 1971, Yale University; J.D. 1974, University of California. Professor Schroeder is a native of Saginaw, Michigan. He served as editor-in-chief of the *California Law Review*. He practiced law with a San Francisco firm for two years before organizing a smaller firm in that city, where he engaged in environmental litigation in addition to a general litigation practice. He joined the Duke law faculty in 1979, and has also taught at UCLA. He teaches in the fields of environmental law and property.



Melvin G. Shimm, Professor of Law

A.B. 1947, Columbia University; LL.B. 1950, Yale University. Professor Shimm is a native of New York City and served three years with the Army. He practiced law privately in New York City from 1950 to 1951 and as an attorney for the Wage Stabilization Board in Washington, D.C., from 1951 to 1952 before entering law teaching as a Bigelow Fellow at the University of Chicago from 1952 to 1953. He has been at Duke since 1953, serving as associate dean from 1978 to 1983. He has also taught at New York University and the Universities of Southern California, North Carolina, Michigan, and Texas. He has been heavily invested in the Law School's publication program, editing *Law and Contemporary Problems*, the *Journal of Legal Education*, and the American sections of the *Business Law Review* and the *Journal of Business Law*; and organizing and serving first as faculty editor and then as faculty adviser of the *Duke Law Journal*. He has also served as senior consultant with The Brookings Institution, as director of the Association of American Law Schools' Orientation Program in American Law, as director of the Duke University Institute in Transnational Law, and as a member of the North Carolina General Statutes Commission. His teaching interests lie primarily in the commercial law areas.



Martin J. Stone, Assistant Professor of Law

B.A. 1982, Brandeis University; J.D. 1985, Yale University; B.Phil. 1988, Oxford University. Professor Stone began his undergraduate education at the University of California, Berkeley, transferring to Brandeis under a music tuition scholarship after two years. Following completion of his J.D. in 1985, Professor Stone was a Marshall Scholar at Balliol College, Oxford University where he completed a B.Phil. in 1988. At Oxford his research interests centered on Wittgenstein, philosophical logic, and political philosophy. During the 1988-89 academic year, Professor Stone will not be teaching but will continue his research at Duke under a Bost research grant.



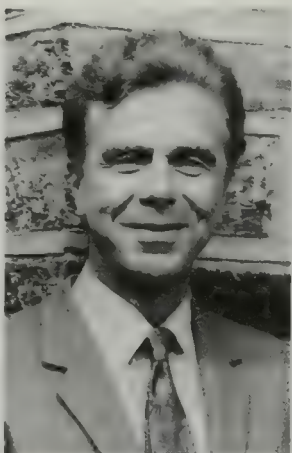
Gwynn T. Swinson, Senior Lecturer in Law

B.A. 1973, Antioch College; J.D. 1976, Antioch School of Law; LL.M. 1986, Duke University. A native of North Carolina, Ms. Swinson has had experience in representing the interests of the federal government in civil matters. Appointed assistant branch director, Commercial Litigation Branch, Civil Division, U.S. Department of Justice in 1980, she previously served as trial attorney for the department's commercial litigation and federal programs branches. In addition to her responsibilities as associate dean for admissions and student affairs, she teaches courses in trial practice and professional responsibility.



William W. Van Alstyne, William R. Perkins and Thomas C. Perkins Professor of Law

B.A. 1955, University of Southern California; J.D. 1958, Stanford University; LL.D. (Hon.) 1976, Wake Forest University; LL.D. (Hon.) 1979, College of William and Mary. A native of California, Professor Van Alstyne was professionally employed first by the California Department of Justice and then by the United States Department of Justice. He began his teaching career at Ohio State University in 1959, coming to Duke in 1965. He has taught at a number of other law schools, including Stanford, the University of California (at Berkeley and at Los Angeles), the Universities of Chicago, Illinois, and Pennsylvania, and in Europe and China. He studied at the Hague Academy of International Law in 1961 and was a senior fellow at Yale in 1964-65. He has been especially active in the American Association of University Professors, serving as president in 1975-76. He is known for his writing and his speaking on the subject of constitutional law, appearing regularly in House and Senate proceedings and in briefs for the U.S. Supreme Court.



Neil J. Vidmar, *Visiting Professor of Law and Social Science*

A.B. 1962, MacMurray College; M.A. 1965, Ph.D. 1967, University of Illinois. Professor Vidmar is a native of Illinois, but moved to Canada in 1967. Since completing his graduate work, he has taught at the University of Western Ontario, except for leaves at the Yale Law School, the Batelle Research Center in Seattle, and Osgoode Hall Law School at York University, Toronto. His principal work has been in the application of social science methods to the study of legal institutions; he is a trustee of the Law and Society Association and a fellow of the American Psychological Association. He has served as a consultant to a number of legal and scientific organizations in Canada and the United States. His most recent book, coauthored with V. Hans, is *Judging the Jury* (1986). At Duke, he serves the Private Adjudication Center as vice-president for research. He also offers instruction in applications of social science to problems of law and the psychology of the litigation process.



John C. Weistart, *Professor of Law*

A.B. 1965, Illinois Wesleyan University; J.D. 1968, Duke University; LL.D. (Hon.) 1981, Illinois Wesleyan University. Professor Weistart was editor-in-chief of the *Duke Law Journal*. He served for a year as a judicial clerk on the Supreme Court of Illinois before joining the Duke law faculty in 1969. He served for three years as editor of *Law and Contemporary Problems* and as American editor of the *Journal of Business Law*, and is a member of the American Law Institute. He has also taught at the Universities of California at Los Angeles, Virginia, Harvard, and Michigan. He is known for his writing in the field of commercial law, and has served as a consultant to the Federal Trade Commission and the Federal Reserve Board. He is also a frequent commentator on issues in the athletics industry.



Visiting Faculty

Robert P. Austin, *Visiting Professor of Law (University of Sydney)*
Claus Gulmann, *Visiting Professor of Law (University of Copenhagen)*
Andreas Heldrich, *Visiting Professor of Law (University of Munich)*
Julian C. Juergensmeyer, *Visiting Professor of Law (University of Florida)*
David M. Kaye, *Visiting Professor of Law (Arizona State University)*
Percy R. Luney, Jr., *Visiting Professor of Law (North Carolina Central University)*
Francis E. McGovern, *Visiting Scholar in Residence (University of Alabama)*
Paul J. Mishkin, *Visiting Professor of Law (University of California at Berkeley)*
James E. Westbrook, *Visiting Professor of Law (University of Missouri)*

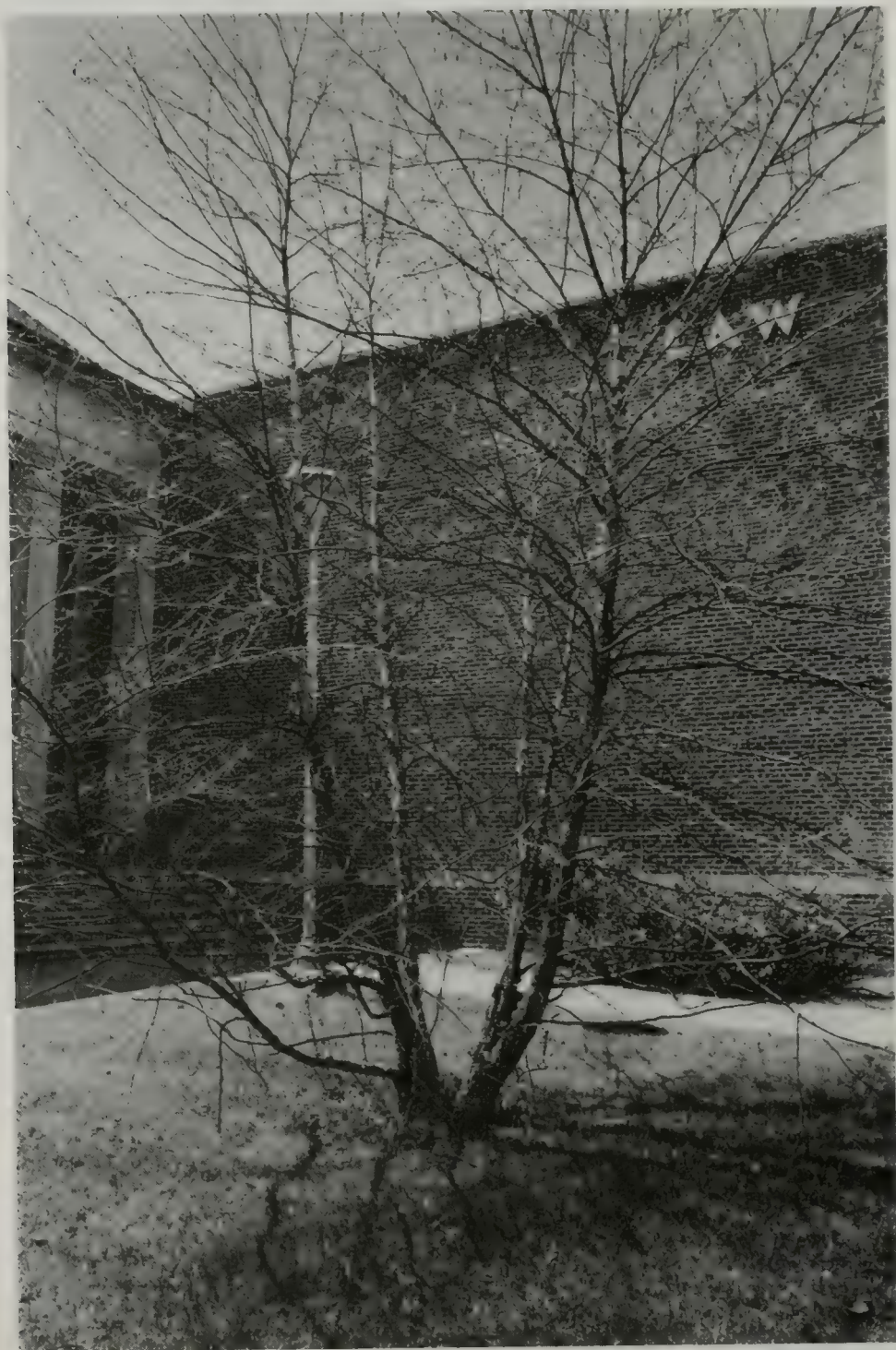
Extended Faculty

Charles L. Becton, *Senior Lecturer in Law*
Donald H. Beskind, *Senior Lecturer in Law*
Michael G. Chiorazzi, *Senior Instructor in Legal Research*
Jennifer M. Dibble, *Lecturer in Law*
Harry T. Edwards, *Senior Lecturer in Law*
Sam J. Ervin II, *Senior Lecturer in Law*
Donald M. Etheridge, Jr., *Senior Lecturer in Law*

Joel L. Fleishman, *Professor of Law and Public Policy Science*
C. Allen Foster, *Senior Lecturer in Law*
Daniel M. Friedman, *Senior Lecturer in Law*
John J. Gibbons, *Senior Lecturer in Law*
Robert M. Hart, *Lecturer in Law*
Sally C. Johnson, *Senior Lecturer in Psychiatry and Law*
Sandra Johnson, *Lecturer in Law*
Elizabeth F. Kuniholm, *Lecturer in Law*
Carolyn McAllaster, *Lecturer in Law*
Ralph L. McCaughan, *Senior Lecturer in Law*
Michael J. Meurer, *Lecturer in Economics and Law*
James L. Oakes, *Senior Lecturer in Law*
J. Dickson Phillips, *Senior Lecturer in Law*
Alvin B. Rubin, *Senior Lecturer in Law*
Allen G. Siegel, *Senior Lecturer in Law*
Janet Sinder, *Instructor in Legal Research*



Admissions



The admissions process for the typical law school applicant is at best onerous. The Law School is aware of the difficulties and uncertainties faced by applicants, and strives to treat each applicant with fairness and candor. The following description of the admissions process at Duke is presented with that object in mind.

Admissions Standards

At Duke, as at many law schools, the three most important criteria, in the order of their importance, are the Law School Admission Test (LSAT) score, the undergraduate grade point average (GPA), and the undergraduate institution attended.

Although reliance on purely academic criteria is appropriate in making some decisions, particularly those involving candidates either clearly admissible or clearly inadmissible, the majority of applications fall between these extremes. For these applications, Duke will give careful consideration to more subjective factors such as proven capacity for leadership, dedication to community service, excellence in a particular field, motivation, graduate study in another discipline, work experience, extracurricular activities, and personal and character information provided in letters of recommendation. Also, in interpreting the applicant's GPA, it is often necessary to make judgments regarding the strength of the course of study pursued and the significance of class rank or the progression of grades.

Although no quotas of any kind are employed in the admissions process, the Law School does make a conscious effort to achieve a broad diversity in each entering class in terms of general background, geography, and undergraduate institutions represented. An individual student may be selected not only for his or her marked potential for academic success, but also because application materials indicate that he or she can bring to Duke unique personal qualities or talents that will enhance the overall character of the entering class.

Duke has a faculty-initiated affirmative action plan for minority admissions, and special care is taken in evaluating applications from members of minority groups who traditionally have not been well represented in the legal profession. On occasion, special consideration is given to children of alumni of Duke University who are qualified to do acceptable work. Female applicants are evaluated according to the same standards as male applicants, and applications from women are encouraged.

An applicant who has been graduated from an accredited college, or one who will have been graduated from an accredited college during his or her course of study at the Law School, may be admitted as a candidate for the degree of Juris Doctor (J.D.). On rare occasions, an exceptionally qualified applicant may be admitted as a candidate for the degree of Bachelor of Laws (LL.B.).

Admission Procedures: J.D. Program

The Admissions Committee receives its authority by delegation from the law faculty and reports to the law faculty. The Committee, composed of four law professors and three law students, decides policy questions arising in the admissions process. Student members of the Committee, however, do not review individual files. All individual applications are reviewed by the Associate Dean and the Assistant Director responsible for admissions.

Each applicant is responsible for collecting and submitting, together with the school's application for admission, the following documents:

1. Completed application form obtained from Admissions Processing, Duke Law School, 3024 Pickett Road, Durham, North Carolina 27705. A recent photograph should be attached to the application.
2. The Law School Application Matching Form which is issued to each applicant taking the Law School Admission Test.
3. Three completed reference forms, one of which should be written by an appropriate academic dean at the undergraduate school last attended. A statement of the applicant's rank in class will be helpful. It is suggested that the other reference forms be written by professors who have personal knowledge of the academic performance and potential of the applicant. References compiled and submitted by an established Career Planning and Placement Office at the applicant's undergraduate school will be accepted. Applicants who have been out of school for some time may substitute letters from employers or others who are well acquainted with their personal traits and intellectual potential. These references must be returned in sealed envelopes which are provided with the application form.
4. A nonrefundable processing fee of \$45. This application fee is not waivable except in cases of extreme personal hardship.
5. Financial aid forms. All applicants are required to return these forms; those not wishing to be considered for aid may so indicate.

Applicants are strongly urged to take the Law School Admission Test (LSAT) no later than December. Registration forms and information should be procured by writing directly to Law School Admission Services (LSAS), Box 2000, Newtown, Pennsylvania 18940. Applicants who are handicapped should contact LSAS directly for information concerning special accommodations for taking the LSAT. Duke does not automatically waive the LSAT for applicants with special needs.

Applicants must arrange for the submission of transcripts from all undergraduate and graduate schools attended to the Law School Data Assembly Service (LSDAS), Box 2000, Newtown, Pennsylvania 18940.

Duke has no formal deadline for the submission of applications. Review of completed applications begins in December and continues until the class is filled. However, past experience indicates that students who apply and complete their applications by January 15 may have a more favorable chance of admission.

Personal interviews on campus are generally not considered in making admissions decisions and, therefore, are not required. It is Duke's assumption that the usual purpose for an interview is to provide the applicant with information about the school. Interviews may be arranged, however, if there are special circumstances that cannot be adequately described in writing or by telephone.

Each applicant extended an offer of admission will be given a reasonable amount of time to respond. Written offers of admission will be sent to admitted candidates specifying the amount of deposit and other conditions required to hold a place in the class. Only in rare cases will offers be extended prior to January 15. A waiting list is established in late spring and held open until the registration date. Offers are extended to applicants on the waiting list as withdrawals occur.

Admission to the Law School is conditional upon receipt of a final official transcript of all undergraduate and graduate work undertaken by the candidate.

Admission Procedures: Summer Joint Degree Programs

Procedures for admission to the summer joint degree programs are no different from those established for the regular J.D. program commencing in the fall semester. Applicants should indicate on the application form that they are applying to the summer program and designate either the LL.M. program offered by the Law School, or the Graduate School department in which they wish to pursue the M.A. Applicants to the LL.M. program are selected by the Law School Admissions Committee. The selection process for M.A. applicants is bifurcated. Upon a favorable decision by the Law School Admissions Committee, the M.A. applicant's file will be forwarded to the appropriate Graduate School department for review. Applicants must be formally admitted to the M.A. program by the Graduate School.

Students must elect whether they wish to be considered for entrance in the summer or fall, and may not be considered concurrently for admission to both programs. A student wishing to change that election may do so prior to receipt of a final admission decision without payment of an additional processing fee. However, the Admissions Committee will treat the application to the alternate program as newly completed; thus a late change in election may prejudice the applicant's chance for admission. This policy reflects our need for a firm commitment from applicants regarding which program they wish to enter so that we may deal fairly with all applicants competing for a limited number of spaces in each class. Although applicant pools may change from year to year, our experience has been that competition for spaces is approximately equal for the two programs.

Other Joint Degree Programs

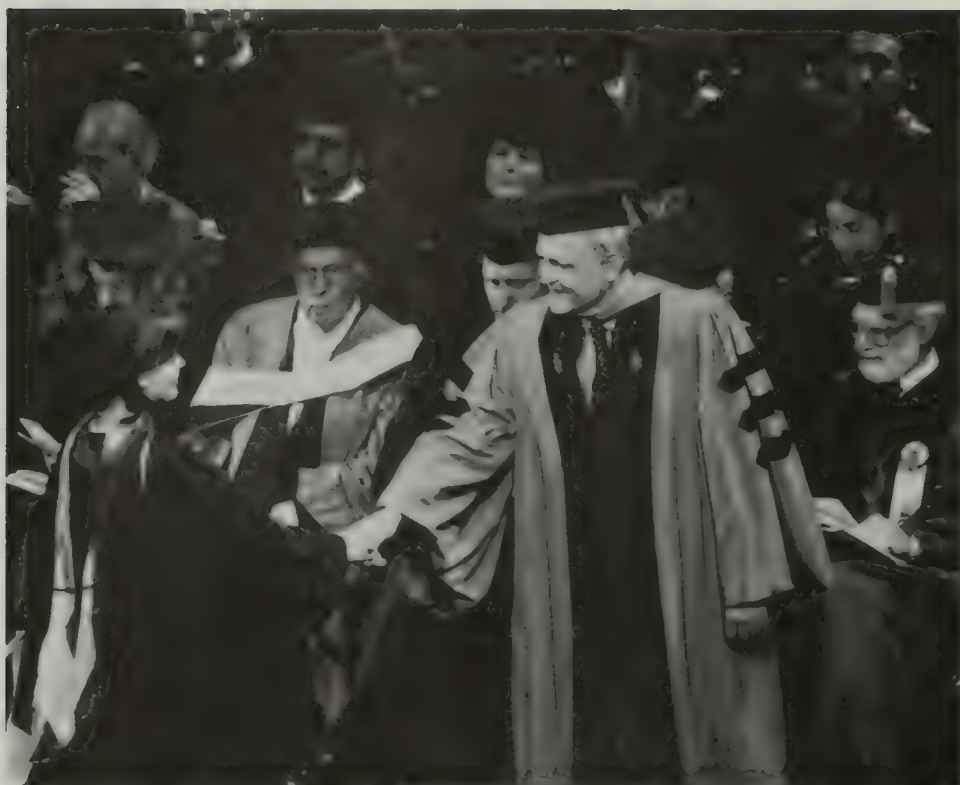
Applicants for any of the other joint degree programs offered by the Duke Law School are considered for admission to both schools on the same basis as those applicants who are applying for the individual programs. The admission decision of one school has no bearing on the admission decision of the other school. If accepted for admission by both schools, the applicant is automatically eligible to participate in the established joint degree program. Students planning to participate in such programs should notify the Law School immediately upon their admission.

Master of Legal Studies

Admission to this degree program is limited to persons who have achieved distinction in law-related professional work or who are pursuing law-related graduate degrees in other fields. Application to the program proceeds in exactly the same manner as for the J.D. program, with the single exception that the LSAT is not required of applicants who have taken the Graduate Record Examination in their primary field of study. Applicants who wish to substitute the GRE score should have an official report sent to the Admissions Office.

Reactivating Admissions Files

If an applicant has applied for admission in a previous year and was not extended an offer of admission or chose not to enter during that academic year, he or she may request that the file be reactivated for consideration by the Admissions Committee. The applicant should update his or her personal statement at that time. A nonrefundable fee of \$45 is charged for processing the application, and a check or money order for this amount must accompany the request for reactivation of the file. The applicant will not be required to reregister with the Law School Data Assembly Service (LSDAS) unless



he or she retakes the LSAT after initially applying to the Law School. An updated transcript will be required to document academic work completed but not reflected on the last LSDAS report received by Duke.

Transfer Policy

In order to be considered for admission to Duke, a transfer applicant must present evidence of the satisfactory completion of one year of study at any law school that is a member of the Association of American Law Schools, and be eligible for readmission to that school. To be given serious consideration for admission, an applicant should rank in the top third of the class. Two academic years of law study must be completed at Duke.

The following items are required to complete a transfer applicant's admission file:

1. A nonrefundable processing fee of \$45;
2. Letter of certification from the Dean of the law school attended;
3. References from two professors who have personal knowledge of the academic performance and potential of the applicant;
4. Certified transcript of all grades earned in the first year of law school;
5. A copy of undergraduate transcript and LSDAS report.

Ordinarily, it should not be expected that action will be taken upon transfer applications before July. Spring semester grades must be received before decisions can be made.

Graduate Study in Law

Admission to Duke to pursue law study beyond the basic professional degree is generally limited to J.D./LL.M. candidates and international students. For information about application to the graduate study program, see the description of admission procedures for the summer joint degree program or the section on international students.

University and Law School Rules

Students are subject to the rules and regulations of the University and the Law School that are currently in effect, or those that in the future may be promulgated by the appropriate authorities of the University. Every student, in accepting admission, indicates a willingness to subscribe to and be governed by these rules and regulations. The student also acknowledges the right of the University to take such disciplinary action, including suspension and/or expulsion, as may be appropriate, for failure to abide by these rules and regulations, or for other conduct adjudged unsatisfactory or detrimental to the University.

Financial Information



The cost of providing a legal education of the quality offered by Duke is high and has been steadily increasing. An annual report of the Law School explains in moderate detail what those costs are, and how they are met; a copy is available on request. As the report reveals, the Law School is substantially subvented by the University from its endowment sources. In addition, the Law School has some resources of its own, including generous annual giving support from its alumni. Nevertheless, the bulk of the cost of the program must be borne by the students who receive it.

Tuition

J.D., LL.B., and M.L.S. Candidates. For the academic year 1988-89, entering students in the J.D. program, transfer students, and candidates for the M.L.S. degree will pay a full year's tuition of \$13,300. Students pursuing the J.D./M.A. or the J.D./LL.M. in the summer entering program will pay an additional \$4,400 in tuition for the summer term.

Subsequent years of study toward the J.D. program will be billed at the current tuition rate. In recent years, that rate has been significantly increased each year. Students in joint degree programs will be billed tuition at rates appropriate to their particular programs.

Entering students must pay their tuition in full before the first day of class and will receive no refund in the event of withdrawal. The reason for this policy is to discourage tentative enrollment which may have the effect of depriving another student of the opportunity to enroll. After the first semester, students who withdraw may be entitled to a substantial refund in accordance with University policy.

Graduate Degree Candidates. Students pursuing the LL.M. degree will pay tuition of \$13,300 in 1988-89 for their single year of instruction. S.J.D. candidates must enroll for two years; tuition for the S.J.D. program for 1988-89 is set at \$13,300.

Other Fees

Late Registration Fee. Students who register in any semester at a date later than that prescribed are required to pay a \$25 penalty.

Student Health Fee. A student health fee of \$238 (\$119 per semester) is charged to all Duke University students. Optional health insurance is available at a cost of \$225 for a single student, \$650 for married student coverage. These figures are approximations.

Athletic Events Fee. Law students may secure admission to all regularly scheduled University athletic contests, with the exception of soccer and basketball, held on University grounds during the entire academic year free of charge. The fee for basketball and soccer is payable in the fall semester. Students may also use the facilities of the Duke golf course upon payment of student green fees.

Duke Bar Association Fee. A \$16 fee each semester is due and payable not later than the day of registration for a particular semester. This fee is utilized exclusively to support the activities of the student bar association.

Parking Fee. Students wishing to drive to the campus may register a car for the Law School's parking lot at an annual fee of \$50.

General Expenses

Applicants should be aware that the following general expense estimates were compiled in the spring of 1988, and for future years appropriate revisions may be necessary to reflect inflationary increases. It should also be recognized that the expenses of a Duke law student may vary considerably according to the style of living assumed, travel distance, and size of family, if any. With the above cautionary statements in mind, the following are the best estimates of total living costs for a nine-month academic year excluding tuition and fees: approximately \$9,500 for single students; approximately \$12,700 for married students. Included in the above cost-of-living estimates are current expense levels for lodging, board, books (approximately \$850 if purchased new), supplies, transportation, and personal effects. Applicants for scholarships and federal loans should be aware that their proposed budget figures cannot exceed the above amounts.

University Policies for Payment of Accounts

Payment of Accounts for Fall and Spring. The Office of the Bursar will issue invoices to registered students for tuition, fees, and other charges approximately four to six weeks prior to the beginning of classes each semester. The total amount due on the invoice is payable by the invoice due date which is normally two weeks prior to the beginning of classes. As part of the admission agreement to Duke University, a student is required to pay all invoices as presented. No deferred payment plans are available. If full payment is not received, a late payment charge as described below will be assessed on the next invoice and certain restrictions as stated below will be applied. Failure to receive an invoice does not warrant exemption from the payment of tuition and fees nor from the penalties and restrictions.

Penalty Charge. If the total amount due on an invoice is not received by the invoice due date, a penalty charge will be assessed from the billing date to the due date of that invoice. The penalty will be assessed on the subsequent invoice at an annual rate of 16 percent applied to the past due balance on that invoice. The past due balance is defined as the previous balance less any credits received and any payments received on or before the due date and also any student loan memo credits, related to the previous balance, which appear on the invoice.

Restrictions. An individual will be in default of this agreement if the total amount due on the student invoice is not paid in full by the invoice due date. An individual who is in default will not be allowed to register for classes, receive a copy of the academic transcript, have academic credits certified, be granted a leave of absence, or receive a diploma at graduation. In addition, an individual in default may be subject to withdrawal from school.

Tuition Refunds. Tuition refunds are governed by the following policy:

1. In the event of death or a call to active duty in the armed services, a full tuition refund is granted.
2. First-year students withdrawing after the tuition due date for the summer or fall term are ineligible for any tuition refund.
3. In all other cases of withdrawal, students or their parents may elect to have tuition charges refunded or carried forward as a credit for later study according to the following schedule:
 - a. withdrawal before the beginning of classes—full refund;
 - b. withdrawal during the first or second week—80 percent;
 - c. withdrawal during the third through fifth week—60 percent;
 - d. withdrawal during the sixth week—20 percent
 - e. withdrawal after the sixth week—no refund; but
 - f. tuition charges paid from grants or loans will be restored to those funds and will not be refunded or carried forward.

Scholarship Assistance

Professional education is expensive. Unfortunately, the Law School must rely upon students to bear the primary burden of this cost, with such help as they may receive from families, governments, or other organizations. The Law School, however, does provide a number of substantial scholarships to entering students.

Scholarship awards are generally made in the form of a contract committing the school to a total grant to be disbursed over the student's first five semesters of Law School. This schedule makes more money available early, when it is most needed, since summer savings and permanent job prospects lessen the financial burdens of most students in the third year.

Students seeking scholarship assistance should file a financial aid application at the same time they apply for admission. Most awards are made just following the admission decision, so that applicants may receive the earliest possible notice of the extent of scholarship support available. The fact that a student has applied for financial aid will not affect the decision on the application for admission.

Need Awards. The Law School also provides a number of scholarships that are intended primarily to aid those students who are most in need of financial assistance. In order to qualify for assistance of this kind, students must have a report prepared for the Law School by the Graduate and Professional School Financial Aid Service (GAPSEAS), Box 2614, Princeton, New Jersey 08540. In order to insure that full consideration of financial need is possible at the time when most of our scholarship funds are awarded, such students are also required to provide accurate information regarding family income and other relevant circumstances on the Duke financial aid application. Inclusion of parental information on the Duke form is mandatory, regardless of whether the student is technically considered 'dependent' under federal guidelines. The Law School fully recognizes that many students are independent of their families for all purposes, but in choosing among competing student needs, those that cannot be met by parents will be accorded priority.

Merit Awards. The Law School competes for students with several fine institutions which enjoy longer traditions of excellence. In order to assure each entering class that it will have a solid core of outstanding members who are admissible to any law school, many awards are made each year based primarily on merit. Merit, for this purpose, is usually defined as extraordinary academic promise manifested by grades *and* test scores which are substantially above the class medians. But the criteria for merit awards also include extraordinary achievement or unusual experience or background. It is not to be supposed that persons receiving such awards are more meritorious, in the broadest sense of that word, than many other entering students whose admissions credentials may seem



a bit less unusual. Indeed, many students who do not receive merit awards will prove to be more deserving of praise as law students. But, it is believed, all students at the school are benefited by the solid assurance given that Duke law students as a group are among the ablest to be found anywhere.

While financial circumstance is a factor in awarding many of these scholarships, the primary purpose of these awards is to assure the quality of the entering class. Students receiving such awards are generally those who reasonably can be expected to make significant contributions to the community, by reason of their exceptional academic promise, extraordinary achievements, and valuable experience or background.

Specially Funded Scholarships. Many of the Law School's scholarships are funded from general endowment and other Law School revenues. However, some scholarship candidates are selected each year for support from one of several specially endowed scholarship funds. The criteria for these named awards vary; all students applying for aid will be considered for any special scholarships for which they may be eligible.

James A. Bell Scholarships were established by the Bell family in honor of a federal judge.

Neill Blue Memorial Scholarships were established in memory of a law student who suffered a tragic death in 1971.

Dunspaugh-Dalton Foundation Scholarships were established by a Miami foundation.

Jenny Ferrara Scholarships were established by Vincent L. Sgroso, of the Class of 1962, in honor of his grandmother.

The Hunton and Williams Scholarship was established by the law firm of Hunton & Williams through its Raleigh, North Carolina office.

The Jack M. Knight Memorial Fund was established by a group of partners at the Charlotte, North Carolina law firm of Robinson, Bradshaw & Hinson, in honor of a 1971 law alumnus.

Elvin R. Latty Scholarships were established by alumni and friends in honor of a former Dean of the Law School.

The Miller and Chevalier Charitable Foundation Scholarship was established by a Washington, DC law firm.

The Robert Netherland Miller Scholarship was established by a Duke law alumnus in honor of a founding partner of the Washington, DC law firm of Miller and Chevalier.

Richard M. Nixon Scholarships were established by the Class of 1937 to honor their classmate, the former President of the United States.

John R. Parkinson Scholarships were established by the Parkinson family.

South Carolina Law Alumni Scholarships were established by South Carolina alumni.

Anna Peirce Stafford Scholarships were established in honor of members of the family.

Bunyon S. Womble Scholarships were established by the Womble family in honor of the founder of a North Carolina law firm.

Upperclass Awards. The great majority of available scholarship funds are allocated to entering students and to students continuing under a scholarship contract awarded at the time of admission. Thus, very little funding is available to supplement contractual awards, even in cases of high need. However, the Law School is able to offer a very limited number of awards to upperclass students who demonstrate substantial need that cannot be met through other sources. Such awards are made for one year only, and carry no right of continuation; all students who apply for aid each academic year are automatically considered for these scholarships, some of which are dependent on the student's performance in law school. In addition to such general endowment funds as may be available from year to year, funding for upperclass awards also comes from the following source:

David H. Siegel Scholarships were established by Allen G. Siegel, of the Class of 1960, in memory of his father.

Loan Assistance

Students who need loan funds to help finance their legal education must also submit a financial aid application at the time admission is sought. When applicants receive an offer of admission they will generally know the amount of scholarship assistance available and will be given a very tentative commitment of loan funds. However, a final determination of loan eligibility is generally not made until late spring or early summer after financial information is complete and governmental funds secure. Students requiring an earlier estimation of loan availability should consult directly with the Law School's financial aid office. The appropriate loan application and a request for any additional documentation required will be sent to the student when the student confirms his or her place in the entering class and accepts the financial aid offer.

Incoming students applying for loans administered or certified by Duke University must participate in the Graduate and Professional School Financial Aid Service (GAPSFAS). Information and application material for GAPSFAS may be obtained by writing to GAPSFAS, P. O. Box 2614, Princeton, New Jersey 08540. Forms for the next academic year are generally available in January, and should be completed and returned as soon as possible; six to eight weeks must be allowed for processing at the Princeton Center. GAPSFAS reports should be received by the Law School no later than May 1 to avoid disadvantaging the student. Additional documentation, income tax returns for the student and his or her parents will be required at a later date.

At this time the following loan sources are either administered by Duke University or are available to Duke law students. Approval of any loan application is based on financial need and satisfactory scholastic standing.

Perkins Loan Fund (formerly the NDSL Program). Loans are available to full-time Duke law students in good standing through the Perkins Fund, assuming the continuation of appropriations by Congress for this purpose. Duke administers all Perkins Funds allocated to it under strict federal guidelines dealing with such issues as the amount of parental income, reasonableness of budgets, complete disclosure of assets, and emancipation within the meaning of the applicable federal regulations. A GAPSFAS report is required to determine Perkins Fund eligibility.

Stafford Student Loans—SSL (formerly Federally Insured Student Loan Program — FISL/GSL). At this writing, the program allows a full-time student in good standing with demonstrated need according to the GAPSFAS report to borrow up to \$7,500 per year. Interest on these loans will be paid by the government while the student is in school.

Other Loan Programs. The Law School participates in four non-need based loan programs. Applications are available upon written request from the Law School's Financial Aid Office.

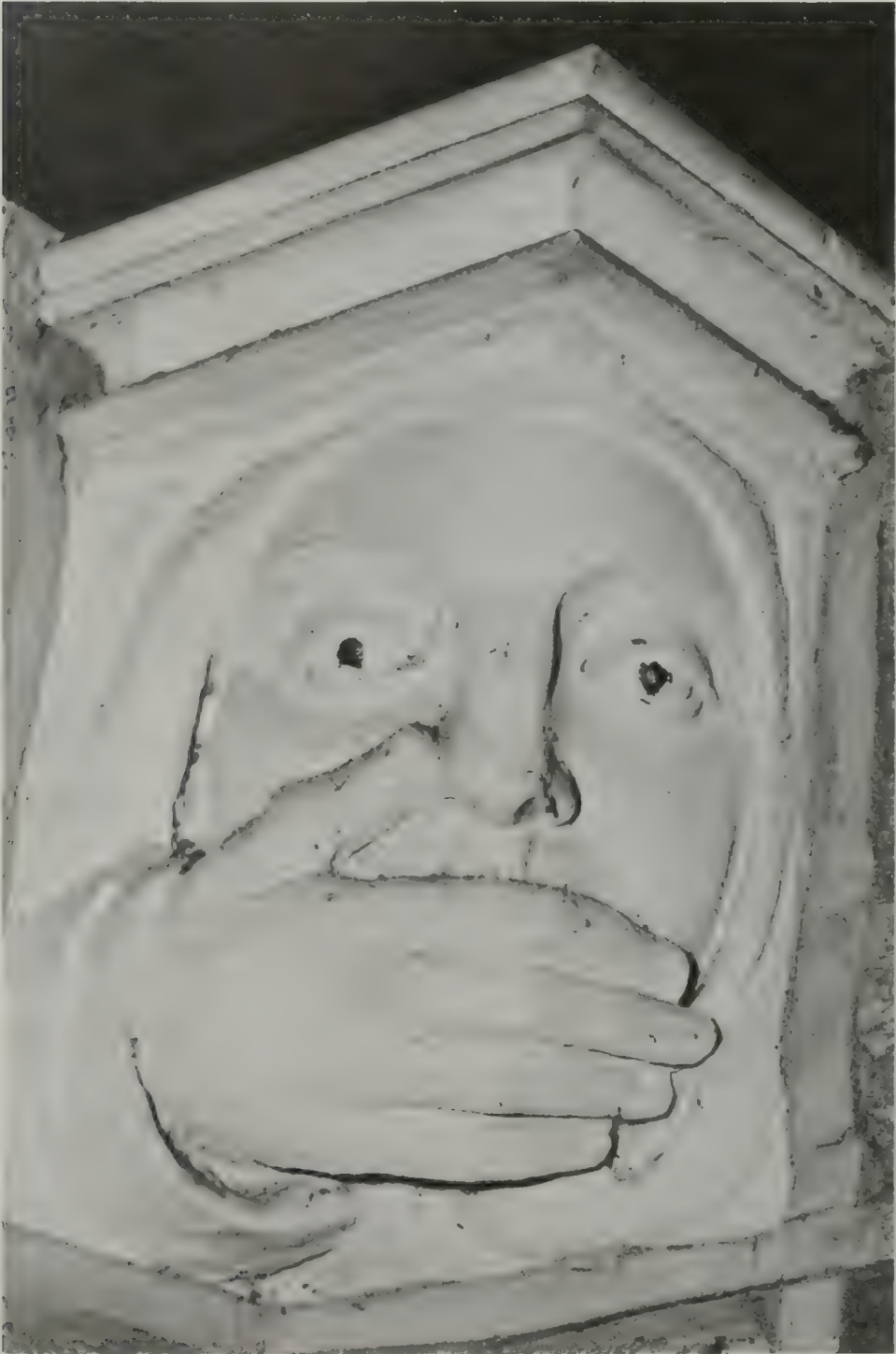
Work Study

The Law School also receives a limited amount of federal work-study funds each year. The school does not recommend that first-year students work, so these funds are reserved for second- and third-year students. A few positions using work-study funding are available each summer at the Law School. Students must acquire these jobs on their own, then seek funding early in the spring from the financial aid office. Students need to be aware that since work-study is a type of federal aid, they are required to save 60 percent of their summer work-study earnings, and these savings become a part of the next academic year's aid package. Academic year work-study is automatically allocated as a part of the student's aid package if funds are available.

Loan Repayment Assistance Program

In May 1988 the Duke Law School faculty approved a program under which the school will assist students who accept low-paying public interest employment following graduation to repay the loans they undertook to support their law school education. The faculty took this action in recognition of the financial burden that large educational loans imposed on new graduates. In order to repay these loans many students who would otherwise be inclined to accept relatively low-paying public interest employment feel compelled to take higher paying positions with private law firms. The faculty's action was an attempt to ameliorate the hardship imposed on graduates taking such public interest jobs and as a response to the school's obligation to support public interest service by its graduates.

Scholastic Standards



Grading

Most courses are generally available only on a graded basis. Independent research, ad hoc seminars and occasionally some other courses may be designated for credit/fail grading by action of the faculty. If a student has previously taken or audited a course for at least an eight-week period, or in other special circumstances, credit/fail grading may be required or authorized in an individual case at the discretion of the instructor and the Dean.

Other Standards and Rules

Like all academic institutions, the Law School is governed by scholastic standards and rules promulgated by the faculty, which cover such matters as eligibility to continue the study of law, academic probation, minimum and maximum course loads, examinations, and registration procedures. A complete copy of these rules is available for review in the Law School library.

Curriculum



First-Year Curriculum

MAJOR COURSES

110. Civil Procedure. A consideration of the basic problems of civil procedure designed to acquaint students with the fundamental stages and concerns of litigation—e.g., jurisdiction, pleading, discovery, trial, choice of law, and multiparty actions. In addition, this course will highlight a number of specialized topics including the role of juries in deciding civil disputes, the ethical responsibilities of the litigation attorney, and the development of alternative dispute resolution systems. At several points, this course will focus on an analysis of the procedural system's operations as revealed through empirical studies. *Metzloff or Vidmar*

120. Constitutional Law. An examination of the distribution of and limitations upon governmental authority under the Constitution of the United States. Included are study of the doctrine of judicial review of legislative and executive action, the powers of Congress and the President, the limitations on state governmental powers resulting from the existence or exercise of congressional power, and judicial protection against the exercise of governmental power in violation of rights, liberties, privileges, or immunities conferred by the Constitution. *Mishkin*

130. Contracts. The formation and legal operations of contracts, their assignment, their significance to third parties, and their relationship to restitution and commercial law developments; the variety, scope, and limitations on remedies; and the policies, jurisprudence, and historical development of promissory liability. *Bernstein, DeMott, Haagen, Powell, or Weistart*

140. Criminal Law. An introductory study of the law of crimes and the administration of criminal justice, including analysis of the criminal act and the mental element in crime, consideration of specific offenses as defined by statute and the common law, and discussion of typical defenses in relation to specific crimes. One of the purposes of this course is to introduce the students to the nature of social control mechanisms and the role of law in a civilized society. *Beale*

160. Property. A study of the basic concepts of real property law and conveyancing, including historical background; estates in land, including the fee simple, the fee tail with its statutory substitutes, the life estate, the estate for years, and other nonfreeholds; concurrent ownership; types of future interests; conveyances before and after the Statute of Uses; landlord and tenant; the modern deed—kinds, delivery, description, title covenants, and agreements running with the land at law and in equity; easements; and recording and title registration. *Schroeder-Adams, or Juergensmeyer*

170. Torts. An analysis of liability for personal injuries and injuries to property. The law of negligence occupies a central place in the course content, but this course also con-

siders other aspects of tort liability such as strict liability, liability of producers and sellers of products, nuisance, liability for defamation and invasion of privacy, and commercial torts. The subjects of causation, damages, insurance (including automobile no-fault compensation systems), and workmen's compensation are also included. *Christie or Lange*

MINOR COURSES

150. Professional Advocacy. One-week intensive course in professional responsibility. 1 s.h. *Staff*

190. Legal Writing and Advocacy. Following instruction in legal research, students write five to seven papers (from client letters to formal appellate briefs) under tutorial supervision of faculty member; at least one brief is argued orally. *Baxter, Christie, Danner, DeMott, Haagen, Powell, Rowe, or Rutledge*

198. Legal Institutions. A comparative study of legal institutions as they have developed in various societies. This course is required for first-year students in the J.D./LL.M. program and is limited to students in that program. 2 s.h. fall. *Christie*

The Upperclass Curriculum

In the absence of special authorization from the Dean, each student is required to take in each semester courses aggregating not less than twelve and not more than sixteen semester-hours in order to be considered a full-time student for purposes of meeting the residency requirement for the J.D. degree.

The program in the second and third years is entirely elective. In planning his or her program, however, the student should bear in mind that certain more basic courses may be prerequisites to other more advanced courses, and that for this reason—as well as to avoid possible schedule conflicts—it is generally advisable to take these more basic courses in the second year.

To facilitate casual examination by the prospective admissions applicant, the upperclass curriculum is divided here into the following categories: (1) American Law and the Private Sector; (2) American Legal Institutions and Procedure, (3) Family Property and Relations, (4) Foreign and International Legal Studies, and (5) Legal Theory and History. Upperclass students are free to select courses without regard for these categories. A number of courses fall clearly into at least two categories and may therefore be listed twice; others could reasonably be listed in two or more categories, but are not.

Those offerings listed as courses are open to large enrollments. Those listed as clinical are limited to enrollment in order to permit close supervision of the professional work students are required to perform. Those listed as regular seminars are also limited in enrollment; research papers are generally required. Those listed as research tutorials are limited to a very few students in number and engage the students in research projects with the instructor.

Upperclass Courses

I. AMERICAN LAW AND THE PRIVATE SECTOR

400. Admiralty. An examination of the special body of law governing maritime affairs, especially the transportation of goods and passengers by water. Included in this coverage are admiralty jurisdiction, marine insurance, carriage of goods, charter parties, general average, rights of injured seamen and others, collision, salvage, maritime liens and ship mortgages, limitation of liability, and governmental activity in shipping. 3 s.h. spring. *Robertson*

205. Antitrust. A study of the federal antitrust laws and the policy of using competition to control private economic behavior. 4 s.h. fall. *Havighurst*

583. Antitrust Practice (Clinical Course). A study of selected current antitrust problems conducted by a professor and a former chairman of the Federal Trade Commission. In addition to examining problems of current doctrinal and theoretical interest (*e.g.*, vertical restraints, merger policy and joint ventures, standard setting and certification, implied exemptions, and professional self-regulation), the class will be given assignments of a practical (clinical) nature. Prerequisite: Antitrust. (Not offered 1988-89.)

207. Athletics and the Legal Process. An examination of legal relationships in professional sports as a basis for developing concepts about the nature of the legal process. To be examined are the respective roles of private contract, collective bargaining, and private and public litigation to resolve conflicts both between players and clubs and among clubs themselves. The major concepts to be applied will be drawn from the areas of labor, antitrust, and contracts law. (Normally offered only in alternate years. Requires prior or concurrent enrollment in Labor Relations.) 2 s.h. spring. *Weistart*

325. Bankruptcy. A study of the methods by which conflicts between the financially distressed debtor and its creditors and conflicts among its creditors may be resolved under the liquidation or rehabilitation chapters of the Bankruptcy Reform Act of 1978. Prerequisite: Commercial Law or Secured Transactions or permission of the instructor. 4 s.h. fall. *Shimm*

255. Basic Federal Income Taxation. An introduction to federal income taxation, with emphasis on the determination of income subject to taxation, deductions in computing taxable income, the proper time period for reporting income and deductions, and the proper taxpayer on which to impose the tax. 4 s.h. fall. *Schmalbeck*

210. Business Associations. An examination of the state and federal law pertinent to corporations and, to a lesser extent, partnerships as business entities. Detailed attention is given to the legal ground rules for the life cycles of corporations—to their organization, preincorporation transactions, basic financial structure, internal governance arrangements, dissolution, and other fundamental changes. Further, a detailed study is made of those portions of the federal securities law that most closely affect the organic law of the corporation—federal regulation of the proxy system and of tender offers and federal restraints on inside trading and on certain other transactions in securities. 4 s.h. fall. *Cox*. 4 s.h. spring. *DeMott and Austin*

300. Business Planning (Clinical Course). Advanced work in corporation, partnership, and income tax law, securities regulation, and accounting. Attention is focused on a series of problems that commonly and currently face business lawyers in the formation and financing of business organizations; restructuring ownership interests and financing their withdrawal; sales and purchases of businesses; and merger and other enterprise combination, enterprise division, and dissolution. The problems are analyzed, and solutions are presented in class discussion and papers by an integrated approach that embraces the interplay of restraints posed by various areas of the law. Prerequisite: Corporate Taxation (may be taken concurrently). (Not offered 1988-89.)

584. Collective Bargaining (Seminar). A comprehensive treatment of the legal and practical aspects of negotiating a collective bargaining agreement in both the public and private sectors. There is substantial student participation, together with practical demonstrations relating to arbitrations and typical bargaining problems. 3 s.h. fall. *Siegel*

554. Commercial Arbitration (Clinical Course). A concentrated lecture presentation of the fundamentals of construction law (two hours per week for three weeks), followed by the students' preparation (four weeks) and presentation (six hours per day for two days in each of two weeks) of a construction arbitration. Two teams of up to six members each utilize the project documents of a recent case to develop practical skills in formulating the theory of the case, preparing the claims/defense manuals, demonstrative

evidence and briefs, examining and cross-examining witnesses, and making opening and closing arguments. Three students act as arbitrators, conduct the hearings, rule on evidentiary matters, and render a written award. There is a 'morning after' critique of each session. In addition, there is a placement for each student as a 'law clerk' to an advocate or an arbitrator in an actual commercial arbitration being presented at the Private Adjudication Center. (Not offered 1988-89.)

215. Commercial Law. An integrated study of the law governing commercial transactions and emphasizing the application of the Uniform Commercial Code, particularly the articles dealing with commercial paper, bank deposits and collections, and secured transactions. Topics that are given particular attention include the function and incidents of common forms of negotiable instruments, the mechanics of the bank collection process, and the operation of retail credit systems. 4 s.h. fall, *Weistart*. 4 s.h. spring. *Shimm*

495. Commercial Law II. A continuation of Commercial Law focusing on payment systems and dealing particularly with letters of credit, credit cards, and electronic funds transfer. 2 s.h. spring. *Shimm*

569. Commercial Practice (Clinical Course). A study of the professional tasks involved in the resolution of commercial disputes. Students are divided into small simulated law firms, each working under the supervision of a senior fellow who is a partner in a major law firm. Each firm receives a portfolio of problems to be handled throughout the year. The assigned tasks for each problem include legal analysis of the client's position and preparation of a memorandum, advice to the client, settlement negotiations with adversary counsel, preparation of briefs, and oral argument before a judge. The problems are prepared, and the work of the student firms largely evaluated, by external examiners who are associates in major law firms. Enrollment is limited to thirty-six students and is subject to approval of the course administrator. 2 s.h. fall and 2 s.h. spring. *Pursley*

220. Construction Law. An interdisciplinary approach to the engineering (design), business, and legal aspects of construction problems, with students from both the engineering and business schools. This course examines these recurring relationships through class lectures and discussions of ten actual problems derived from the instructor's experience as a construction arbitrator and advocate. Participants are occasionally divided into teams who consider the problem cases, develop theories of presentation and evidentiary support, and attempt to resolve the problems variously through negotiation, mediation, arbitration, and litigation. Law students who have taken the course may enroll in the spring clinical seminar in Commercial Arbitration. 2 s.h. fall. *Foster*

315. Corporate Finance. A consideration of the role and impact of financial analysis in the application and development of legal norms in connection with recurring corporate transactions. Coverage includes an investigation of the financial considerations arising in connection with valuation of a business corporation, rearrangement of the rights of creditors and stockholders in bankruptcy, establishment of dividend and reinvestment policies of publicly traded corporations, and measurement of the fairness and success of corporate acquisitions. 2 s.h. spring. *DeMott*

320. Corporate Taxation. A study of the special provisions of the Internal Revenue Code concerning the tax effects of the major events that occur in the life span of a corporation, including the taxation of distributions to shareholders and the formation, reorganization, and liquidation of corporations. Prerequisite: Basic Federal Income Taxation. 3 s.h. spring. *Schmalbeck*

359. Economic Analysis of the Law. An exploration of diverse topics in law and economics such as property rights and externalities, tort law and optimal accident prevention, use of economics by the courts, the economics of contracts, and theories of economic justice. 3 s.h. spring. *Culp*

589. Economic Analysis of Patent Law (Seminar). This seminar will draw upon concepts from microeconomic theory to explore policy issues relevant to the design and implementation of an efficient patent system. A substantial portion of this seminar will be devoted to an examination of the conflict between antitrust law and patent law concerning the terms of patent licenses. Other topics to be studied include: the litigation and settlement of infringement suits, a comparison of trade secret law with patent law, and the scope of the disclosure requirement attendant to the patent grant. Our inquiry will emphasize consideration of the effect of patent institutions on the incentive to undertake research and development, and the costs to society of providing that incentive.

The necessary economic theory will be developed in the seminar, but a background in economics would certainly be helpful. Prerequisites: Antitrust law or intellectual property law, joint degree program in law and economics, or permission of the instructor. 2 s.h. spring. *Meurer*

517. Employment Discrimination. A study of the law of employment discrimination, focusing mainly on federal law prohibiting race, sex, age, and handicapped discrimination. This course provides a basic knowledge of statutory coverage, standards, procedures and proof, and avenues of relief. Class discussion emphasizes important issues arising in current cases: for example, reverse discrimination versus affirmative action, the controversial "comparable worth" concept in equal pay litigation, and the 'bottom line' defense to test invalidation. 3 s.h. fall. *Culp*

326. Entertainment Law (Clinical Course). An introduction to selected theories, statutes, and regulations (other than intellectual property law) governing principal undertakings, business transactions, and legal relationships in the entertainment industry, including publishing, the theater, television and motion pictures, music, and related fields. (Normally offered in alternate years. Requires concurrent or prior enrollment in Intellectual Property I.) 3 s.h. fall. *Lange*

327. Environmental Law. A study of major policy and legal issues raised by efforts to manage environmental harms and pressure ecological systems. Emphasis in the course is on recurring themes and conflicts, and on the economic, social, ecological, and political assumptions that underlie the different responses that have been proposed. 3 s.h. fall. *Schroeder*

659. Fiduciary Obligation (Research Tutorial). Research and writing on a variety of issues created by fiduciary obligation as a distinct species of legal obligation. Specific topics include but are not limited to: (1) fiduciary constraints in bank-lender and bank-depositor relationships; (2) obligations of trustees of pension funds and not-for-profit institutions; (3) aspects of "contracting out" of fiduciary obligation; (4) aspects of the fiduciary constraint in corporate law. Enrollment will be limited. 3 s.h. fall, 3 s.h. spring. *Demott*

250. Financial Information, Accounting, and the Law. Many attorneys are required to evaluate financial data, notably financial statements from corporations, on a regular basis. The need is not limited to corporate attorneys; indeed litigators in securities, antitrust, malpractice, or general commercial litigation frequently must analyze financial information. Proper evaluation requires a familiarity with accounting principles and practices. This course serves to both introduce basic accounting principles and practices and their relationship to the law, as well as to study a number of contemporary accounting problems relating to financial disclosure and the accountant's professional responsibility. 2 s.h. fall. *Etheridge*

337. Health Care Law and Policy. A survey of the legal environment of the health services industry in a policy perspective, with particular attention to the tensions and trade-offs between quality and cost concerns. Topics for study include manpower policy and licensure; private personnel credentialing and institutional accreditation; hospital staff privileges; malpractice liability; health planning and certificate-of-need regulation;

hospital reimbursement and rate setting; public and private methods of rationing medical care; health insurance and alternative financing and delivery systems; and the emerging role of competition and antitrust law. This course should be of interest to students interested in public policy and in law and economics as well as those with specific interests in the health care field. 3 s.h. spring. *Havighurst*

229. Insurance Law. An examination of the nature of insurance and the insurance contract. Possible topics include: the role of risk classification, marketing, the principle of indemnity and the notion of an insurable interest, subrogation, the risks transferred, rights at variance with policy provisions, claims processes, and justifications for and the nature of regulation of insurance institutions. (Not offered 1988-89.)

357. Intellectual Property I: Law and the Arts. An introduction to the principal theories of intellectual property in the fine arts and in the entertainment and sports industries. Includes comprehensive instruction in copyright, unfair competition, and the right of publicity, as well as selective coverage of other doctrines. 2 s.h. fall. *Lange*

367. Intellectual Property II: Business Intellectual Property. An introduction to trademark and patent law licensing and the law of trade secrets, as well as selective coverage of other subjects in conventional business and industrial settings. Prerequisite: concurrent enrollment in Intellectual Property I. (Not offered 1988-89.)

607. Intellectual Property III (Tutorial). Research and writing on selected topics in intellectual property. Limited availability; permission of the instructor required. 3-6 s.h. fall and spring. *Lange*

240. Labor Relations. A study of the law of labor-management relations, centering upon the National Labor Relations Act, as amended. This course investigates problems involved in the regulation of industrial conflict (strikes, picketing, boycotts, and unfair labor practices by employers), the establishment of the collective bargaining relationship, the negotiation and enforcement of the collective agreement, the arbitration of disputes under the agreement, the relationship between the union and its members, and the protection of individual and minority rights. 3 s.h. fall. *Westbrook*

608. Labor Relations II (Tutorial). Directed research in advanced labor problems. Topics may include: the fit between legal rules and workplace conditions, the aptness of National Labor Relations Board procedures, the relations between rights afforded by collective agreements and those guaranteed by law, and the implications of the division between unionized and nonunionized sectors. Prerequisite: strong background in labor law and consent of the instructor. (Not offered 1988-89.)

544. Land Use Planning (Seminar). An in-depth study of select jurisdictions to determine the impact of various legal issues in land use planning on communities in those jurisdictions, including the "taking issue"-section 1983; the Central Business District and the Sherman Act; the impact of changing demography in the last thirty years on local zoning policies; the acceptance or rejection of the halfway house; and the attitude of communities toward "time sharing." A term paper is expected. (Not offered 1988-89.)

396. Oil and Gas. A study of the law governing the recognition and protection of property interests in oil and gas in natural reservoirs and an analysis of the transactions, particularly the oil and gas lease, by which the right to produce oil and gas is purchased. Although this course is focused on the private law problems of landowners and firms interested in mineral development, the legal problems and policy implications of government intervention for conservation and for economic regulation are considered. 3 s.h. fall. *Maxwell*

655. Professional Liability (Research Tutorial). Selected topics in the development of professional liability with a focus on the utility of tort law as a means of regulating

professional conduct. Limited to three students, by application to the professor. 3-6 s.h. fall. *Metzloff*

593. Professional Liability (Seminar). The past fifteen years have seen a significant increase in the number, as well as the complexity, of claims asserted against professionals. The potential liability of attorneys, accountants, doctors, architects, and other 'professionals' is a matter of great importance given the significant resources expended in providing professional services in the United States. This course will analyze the contours of liability principles in professional malpractice cases in the context of the legal, medical, and accounting professions. In addition, this course will study the interaction of malpractice cases with professional ethics and the theory of self-regulation. (Not offered 1988-89.)

365. Real Estate Financing. An examination of the law governing transactions in which land is used as security for a debt. This course will focus on the law of a single jurisdiction to allow students to work with the subject in a systematic and realistic fashion. Although most of the materials used will come from the legal system of California, reading assignments will also be made in a general textbook. Prerequisite: Commercial Law. 3 s.h. fall. *Maxwell*

370. Regulated Industries. A study of government economic regulation and deregulation in such regulated industries as transportation, electric power, telephone, broadcasting, oil and gas, and health care, with emphasis on control of entry, mergers, and rates, and on the interface between regulation and the antitrust laws. (Not offered 1988-89.)

375. Securities Regulation. A study of the federal and state securities laws and the industry they govern with emphasis on the regulation of the distribution process and trading in securities; subjects dealt with include the functions of the Securities and Exchange Commission, registration and disclosure requirements and related civil liabilities, "blue-sky" laws, proxy solicitation and reporting requirements, broker-dealer regulation, the self-regulatory functions of the exchanges, and the regulation of investment companies. 3 s.h. fall. *Cox*

376. Securities Regulation II. (Seminar). This seminar will meet approximately every other week during the spring 1989 semester, generally on Friday afternoon, with occasional Saturday morning meetings to review written projects. This class will focus on selected current issues in securities regulation and financial institution regulation. The selected issues will be explored in fact-specific settings from a client-oriented, hands-on perspective. One of the fact settings will involve a complete review of a major corporate transaction, such as an acquisition, recapitalization or leveraged buyout. Emphasis will be placed on identifying the specific legal issues involved and evaluating the range of alternatives available to the client to achieve its business objective.

The selected current issues will include some of the following issues: share purchase rights plans (so-called "poison pills"); recapitalizations as anti-takeover defenses; inadvertent investment companies; formation of an investment company; regulatory problems involved with the acquisition of financial institutions; interstate banking expansion; issuer repurchases of its own securities; management sponsored leveraged buyouts; innovative financial instruments, (e.g., collateralized securities, zero coupon notes, adjustable rate preferred); issues involved in negotiated acquisitions of public companies, including disclosure of merger negotiations and lock-ups.

Course work will include three or four memoranda of three to five pages each. Two of the memoranda will be done on a team basis, with each team consisting of two to three students. 3 s.h. spring. *Hart*

644. Securities Regulation III (Research Tutorial). This seminar will carry one (1) unit of credit in the fall and two (2) units of credit in the spring. Students must enroll

in each semester and there is a limit of six students. Students will work closely with Professor Cox in preparing textual material for a forthcoming book on securities regulation. Students will select two or three topic areas each to be examined in an extensive memorandum. Among the topics are broker-dealer obligations under the securities laws, national market systems, scope of Investment Company Act and Investment Advisors Act, securities underwriting practices, regulation of broker-dealers by membership organizations, the meaning of distributions, and the section 5 obligations of control persons. (Not offered 1988-89.)

518. Tax Exempt Organizations (Seminar). Structure, incidence, and economic effects of major federal taxes. Special attention to problems of inflation, income definition, and distortions of economic incentives in the areas of savings and investment. Prerequisite: Basic Federal Income Taxation. 3 s.h. spring. *Schmalbeck and Clotfelter*

II. AMERICAN LEGAL INSTITUTIONS AND PROCEDURES

200. Administrative Law. A study of administrative agencies and legislative authority, information gathering and withholding, rule-making and order-formulating proceedings, judicial review of administrative action, and constitutional limitations on administrative powers. 3 s.h. spring. *Baxter*

583. Antitrust Practice (Clinical Course). A study of selected current antitrust problems conducted by a professor and a former chairman of the Federal Trade Commission. In addition to examining problems of current doctrinal and theoretical interest (e.g., vertical restraints, merger policy and joint ventures, standard setting and certification, implied exemptions, and professional self regulation), the class will be given assignments of a practical (clinical) nature. Prerequisite: Antitrust. (Not offered 1988-89.)

536. Child Advocacy (Clinical Course). A two-semester practicum in child advocacy. Students will be assigned to represent children in abuse and neglect cases in Durham County, under the supervision of members of the Durham bar and the course instructor, pursuant to the North Carolina Rules Governing the Practical Training of Law Students. Students will gain experience in interviewing, counseling, negotiation, case planning, trial practice, motion practice, and some discovery. In addition to work on actual cases, students will participate in a classroom seminar, in which the practical and ethical considerations involved in representing children will be explored. Medical doctors, social workers, psychologists, judges, and attorneys will participate in the seminar sessions. Simulated exercises will be used to sharpen advocacy skills. Must be taking or have taken Family Law and Trial Practice. Must also be a third-year student in good academic standing. Class limited to nine students. 2 s.h. fall and 2 s.h. spring. *McAllaster*

380. Civil/Criminal Trial Practice (Clinical Course). An introduction to the civil and criminal litigation process and attendant skills. This course emphasizes the interactions between attorneys and their clients and between lawyers and juries by use of simulation and videotape pedagogy. Areas of inquiry include trial preparation, opening statements, closing arguments, evidentiary objections, and direct- and cross-examination of witnesses. Each student completes the course requirements by participating as counsel in a full jury trial. Prerequisite: Evidence. 3 s.h. fall. *Swinson*; 3 s.h. spring. *Beskind, Becton, Johnson and Kuniholm*

310. Conflict of Laws. A study of the special problems that arise when the significant facts of a case are connected with more than one jurisdiction, including recognition and effect of foreign judgments, choice of law, federal courts and conflict of laws, and the United States Constitution and conflict of laws. 3 s.h. spring. *Reppy*

420. Class Actions. This course will examine the theory and practice of distinctively American contemporary innovations in civil procedure. The study will cover both injunctive and compensatory class suits, and such alternatives as public actions and

interdistrict transfers for pretrial consolidation. This course will serve as a review of such matters as jurisdiction over parties, federal jurisdiction, venue, discovery, claim preclusion, issue preclusion, appellate jurisdiction, conflict of interest, the contempt power, attorney fee shifting, settlement, standing of parties, and most other topics that may have been the subject of study in the basic course in Civil Procedure. All are viewed in the more intricate setting of suits brought to assert and redress rights not merely of individuals, but of aggregations of alleged victims, or, in some cases, against aggregations of alleged wrongdoers. The secret can be disclosed in advance that such forms of litigation place strain on traditional theories of procedure resting on adversary responsibility and initiative and not infrequently leave the earnest student somewhat bewildered not merely by the complexity of the process, but also by its underlying tenets. (Not offered 1988-89.)

550. Constitutional History. A three-part course, the first part is devoted to the Constitution's early history. The second part focuses on the institutions of slavery and the law before and after the Civil War. The third part focuses on the New Deal and its relations with the Supreme Court. 2 s.h. fall, 2 s.h. spring. *Powell, Leuchtenburg, and Franklin*

625. Seminar in Constitutional Law—Theories of Constitutional Adjudication. An examination of the role of the Supreme Court and problems of method in deciding constitutional issues. This seminar will cover such topics as the current controversy over "original intent," problems of interpretation, the uses of history, legislative motive, the "countermajoritarian difficulty," legislative facts, and interest balancing. It is likely also to include some coverage of left (Critical Legal Studies) and right critiques of mainstream constitutional doctrine, and some illustrative application of various of these "method" questions in current or recent major cases. A paper is required, plus either an examination or a second paper. Prerequisites: completion of a basic course in constitutional law, and a (reasonably) serious interest in confronting difficult and often rather theoretical questions of the role the Supreme Court and constitutional adjudication should play in American government. (Not offered 1988-89.)

521. Criminal Litigation (Clinical Course). An examination of the lawyering process in criminal cases from the point of view of the criminal justice practitioner. Using videotape simulation, students will participate as attorneys in simulations of various stages of criminal justice process from initial interview through trial, with special emphasis on pretrial proceedings. The clinical phase of the seminar requires each student to practice with criminal justice practitioners pursuant to the North Carolina Rules Governing Practical Training of Law Students. Placements include district attorneys, the public defender, and private defense counsel. Prerequisites: Criminal Procedure: Police; Evidence; and Trial Practice. 4 s.h. spring. *Mosteller*

223. Criminal Procedure: Formal. A study of the basic rules of criminal procedure, beginning with the institution of formal proceedings. Subjects to be covered include prosecutorial discretion, the preliminary hearing, the grand jury, criminal discovery, guilty pleas and plea bargaining, jury selection, pretrial publicity, double jeopardy, the right to counsel, and professional ethics in criminal cases. 3 s.h. spring. *Beale*

222. Criminal Procedure: Police. A study of the legal restrictions on police investigative practice which typically precede institution of formal proceedings, with special emphasis upon "stop and frisk," arrest, search and seizure, confession suppression, lineups, electronic surveillance, grand jury investigations, and operation of the exclusionary rule. 3 s.h. spring. *Mosteller*. 2 s.h. spring. *Everett*

385. Criminal Trial Practice (Clinical Course). An introduction to the trial process through the criminal trial and development of attendant skills. This course emphasizes the interactions between lawyers and judges and juries by use of simulation exercises and videotape review. The traditional areas of inquiry in trial practice will be covered in this course through the vehicle of the criminal trial process. They include trial prepa-

ration, jury selection, opening statements, evidentiary objections, and direct and cross-examination. In addition, substantive materials from Criminal Procedure: Police will be treated through litigation of motions to suppress tangible evidence, statements, and identification under the Fourth and Fifth Amendments. In this portion of the course, students will be expected to conduct investigation, analyze facts, write motions and legal memoranda, and litigate suppression hearings. Trial tactics and strategy will be carefully examined. This course culminates in a full jury trial with each student participating as counsel. Prerequisites: Evidence and Criminal Procedure: Police. (Not offered 1988-89.)

225. Evidence. A study of the theory and rules governing presentation of evidence to a judicial tribunal, including the concept of relevancy; character evidence; judicial notice; real and demonstrative evidence; expert testimony; authentication of writings; the best evidence rule; competency, impeachment and rehabilitation of witnesses; hearsay and the exceptions to its exclusion; and privileged communications. 3 s.h. fall. *Kaye* 3 s.h. spring. *Mosteller*

555. Federal Appellate Practice-A (Clinical Course). This course includes study of appellate practice and procedure in the federal courts and instruction in oral advocacy and brief writing. Students argue a difficult appeal to an experienced judge. Students who excel are selected for the Moot Court Board, competition for the Dean's Cup, and interscholastic competition in appellate advocacy. 2 s.h. fall. *Friedman, Phillips, Gibbons, Ervin, and staff*

500. Federal Civil Rights (Seminar). A study of advanced constitutional law and federal practice, working through a series of problems to provide: (a) familiarity with the principal federal statutes (procedural, substantive, and remedial) used in civil rights litigation; (b) their judicial interpretation and application; and (c) a consideration of frontier constitutional issues. (Not offered 1988-89.)

340. Federal Courts. A study of the many ways in which federalism affects the workings of the federal courts and their relations with other branches and the states. This course covers the jurisdiction of the federal courts, original and appellate—the constitutional scope of Article III, justiciability, Congressional authority to define and limit, federal question and diversity jurisdiction, removal, pendent and ancillary jurisdiction, and abstention; some aspects of the law applicable in federal court—*Erie*, federal common law, and civil rights actions and immunities; and judgments—direct review of state and federal decisions, federal-state res judicata, and collateral attack via habeas corpus. 4 s.h. spring. *Rowe*

568. Judicial Function and the Appellate Process. A study of select issues and problems concerning the judicial function and appellate process in the federal system. This course includes three phases. The first phase is devoted to a study of legal doctrine affecting the appellate process, including: jurisdictional issues of particular interest at the appellate level; final orders and interlocutory appeals; prudential considerations limiting appellate review; waiver of appealable issues; the proper scope and standard of review (with emphasis on administrative agency appeals); and the remedial authority of the courts. The second phase is designed to provide a significant clinical experience in appellate advocacy, including: analysis of an actual case problem; consideration of when and what to appeal; preparation of an appellate brief; and review of techniques of oral advocacy. The final phase focuses on the judicial process from a more reflective and philosophical perspective, including: a critique of the judicial philosophies of some leading jurists; a consideration of the function of courts and judges in a democratic society; and preparation of a short paper dealing with some significant aspect of the judicial process.

There will be no final examination. The class normally will meet for two hours, once a week at a fixed time (on either Wednesday or Thursday afternoon). There will be occa-

sions, however, when classes are rescheduled (to meet on two consecutive days) to take account of Judge Edwards' judicial schedule and to allow adequate time for students' oral arguments. Enrollment limited to sixteen. 4 s.h. spring. *Edwards*

343. Federal Criminal Law. This course deals with the enforcement of federal criminal statutes including those relating to tax fraud, mail fraud, civil rights, drug enforcement, the Hobbs Act, the Travel Act, and the Racketeer-Influenced and Corrupt Organizations (RICO) Act. The limits on federal criminal jurisdiction and legal issues arising out of the overlap of federal and state law will also be examined. 2 s.h. spring. *Beale*

344. First Amendment. The basic constitutional law of the free speech-free press clause and the church-state clauses of the first amendment. 2 s.h. spring. *Van Alstyne*

561. Forensic Psychiatry (Clinical Course). This course is designed to provide the student with a working knowledge of the major areas of interface between psychiatry and law. Basic concepts of clinical psychiatry and psychopathology will be highlighted throughout the course. The attorney and the psychiatrist roles in the commitment process, right to treatment and right to refuse treatment, competency to stand trial, and criminal responsibility will be explored using a number of methods. Discussion of assigned readings, short lectures, interviews and observation of patients involved in legal proceedings, films, guest speakers, and field trips will form the basis of the course. The students will periodically be asked to use the information from the course together with independent and group research to complete short projects and class exercises. 3 s.h. fall. *Johnson*

558. Habeas Corpus and Criminal Appeals (Clinical Course). Examination of post-conviction remedies in the Fourth Circuit; preparation of an appellate brief for a state or federal case; analysis of habeas petitions pending in federal district courts and participation in habeas cases which proceed to plenary hearings; drafting of an opinion in a federal habeas case. Enrollment limited to eight students. (Not offered 1988-89.)

648. U.S. Fourth Circuit Development (Tutorial). Research for the bicentennial history of the United States courts of the Fourth Circuit from 1789 to the present. Individual research and group discussion on the development of judicial institutions and research law in this southern circuit. 3-6 s.h. fall and spring. *P. Fish*

567. Inference, Probability, and Proof. Readings in the nature of inference and the proof of facts, focusing on the following topics: differences between deductive and inductive reasoning, the place and meaning of probability in inductive arguments, the methodology of statistical inference, and decision theory as a device for understanding the burdens of persuasion and the probative value of evidence. The readings will be drawn from the philosophy of science and the cognitive sciences as well as the legal literature.

The theories of inference and probability will be applied to such topics as probabilistic proof of causation in toxic tort litigation, statistical models in discrimination litigation, and probabilistic characterizations of evidence in criminal and civil cases.

Each student will prepare and present a paper on an approved topic. 2 s.h. fall. *Kaye*

534. Judicial Administration. Examination of the judicial function in relation to historical and contemporary politics of court organization, management, and procedures as well as of selection and discipline. Focus is on American federal judicial system with references to state and comparative aspects of adjudication-administration. Two required ten-page papers or weekly assigned reserve readings are due for seminar meeting devoted to discussion of those readings. With permission of the instructor a student may write an additional paper of substantial length on course subject matter, and receive 3 s.h. (Not offered 1988-89.)

552. Religion and Law (Seminar). Interdisciplinary investigation of the impact of first amendment doctrine on religious organizations; the legal rights and moral obliga-

tions of clergy in questions involving the application of the testimonial privilege based on the priest-penitent relationship; state regulation of cult groups; attempts by religious groups to counter the secularization of law in areas such as abortion, sexual preference, and censorship; comparison of the concepts "punishment" and "sin." Readings will include case law, statutes, and writings by legal and religious commentators. Additionally, teams of students will study one topic in depth and make an oral presentation to the class. There is no final examination. (Not offered 1988-89.)

540. Legislation (Seminar). A study of the factors involved in the development and passage of legislation, and in its interpretation by the courts. Topics covered include theories of legislation, legislative procedure and process, problems in drafting statutes, compilation of legislative histories, and determination of legislative intent. A research paper is required. 2 s.h. fall. *Danner*

579. Mass Tort Litigation (Seminar). This course will be divided into three sections: (1) legal and scientific background, (2) trial preparation and tactics, and (3) case management of specific mass torts. The classes will involve lectures, demonstrations by practicing attorneys, and role playing by students. Guests for the seminar will include attorneys and judges involved in Agent Orange, asbestos, benzene, Dalkon Shield, DDT, groundwater, and cigarette litigation. The readings will consist of cases and materials prepared specifically for the course and grades will be based upon role playing in class and a paper. 2 s.h. spring. *McGovern*

571. Negotiation (Clinical Course). An examination of the lawyer's role as a negotiator in seeking to resolve legal disputes without resort to full adjudication. This course focuses on techniques, tactics, ethics, and other aspects of the negotiation process. Students are divided into teams which compete with each other in seeking to negotiate settlements in a series of simulated disputes involving such matters as commercial transactions, personal injury claims, real estate transactions, antitrust litigation, and labor relations. Enrollment limited to twenty-four. (Not offered 1988-89.)

593. Professional Liability (Seminar). The past fifteen years have seen a significant increase in the number, as well as the complexity, of claims asserted against professionals. The potential liability of attorneys, accountants, doctors, architects, and other 'professionals' is a matter of great importance given the significant resources expended in providing professional services in the United States. This course will analyze the contours of liability principles in professional malpractice cases in the context of the legal, medical, and accounting professions. In addition, this course will study the interaction of malpractice cases with professional ethics and the theory of self-regulation. (Not offered 1988-89.)

498. Psychology of Litigation. The litigation process inherently involves psychological perceptions and evaluations. What causes people to pursue legal rights in the first place? Why does settlement of disputes occur? What causes litigants to prefer different types of resolution forums? How do jurors respond to witnesses and other types of evidence? The seminar will address these and other questions by reference to empirical social science literature. (Not offered 1988-89.)

332. Remedies. A survey of the law of judicial remedies in civil litigation, with illustrative applications in various areas of private and public substantive law. This course covers the main types of remedies—compensatory and punitive damages, equitable relief including injunctions and specific performance, declaratory judgments, and restitution, considering both their basic characteristics and their interrelations. Illustrative applications are drawn primarily from the substantive fields of tort (injury to persons and to personal and real property), contract, and civil rights. Normally offered in alternate years. (Not offered 1988-89.)



499. Social Science in Law (Seminar). This seminar will examine the application of social science to problems of law. Selected problems will be considered in which the empirical methodologies of the social sciences can be used to produce evidence bearing on legal propositions. Some of these problems include discrimination, obscenity, trademark infringement, jury behavior, eye witness identification, dangerousness, the fashioning of remedies, and evaluations of legal reforms. The goal of this seminar is to teach the law student to be a sophisticated consumer—and critic—of the social science research that is used in all levels of American courts. Students need not have a social science background. 2 s.h. spring. *Vidmar*

III. FAMILY PROPERTY AND RELATIONS

536. Child Advocacy (Clinical Course). A two-semester practicum in child advocacy. Students will be assigned to represent children in abuse and neglect cases in Durham County, under the supervision of members of the Durham bar and the course instructor, pursuant to the North Carolina Rules Governing the Practical Training of Law Students. Students will gain experience in interviewing, counseling, negotiation, case planning, trial practice, motion practice, and some discovery. In addition to work on actual cases, students will participate in a classroom seminar, in which the practical and ethical considerations involved in representing children will be explored. Medical doctors, social workers, psychologists, judges, and attorneys will participate in the seminar sessions. Simulated exercises will be used to sharpen advocacy skills. Must be taking or have taken Family Law and Trial Practice. Must also be a third-year student in good academic standing. Class limited to nine students. 2 s.h. fall and 2 s.h. spring. *McAllaster*

218. Community Property. A survey of the marital property laws of Arizona, California, Idaho, Louisiana, Nevada, New Mexico, Texas, Washington, and Wisconsin, with comparison to the Spanish system. Students may concentrate their studies on the law of one of the nine states. (Not offered 1988-89.)

330. Estate and Gift Taxation. A study of the rules governing federal taxation of wealth transfers. Prerequisite: Basic Federal Income Taxation (may be taken concurrently). A prior or concurrent enrollment in Trusts and Estates is recommended. 3 s.h. fall. *Adams*

515. Estate Planning (Clinical Course). An examination of the problems and techniques of estate planning and administration, including the income taxation of trusts and estates. Students prepare planning recommendations and draft related documents for hypothetical clients. Prerequisites: Basic Federal Income Taxation, Corporate Taxation (can be taken concurrently); Estate and Gift Taxation and Trusts and Estates. 3 s.h. spring. *McCaughan*

335. Family Law. A study of legal issues relating to the family, including marriage, unmarried cohabitation, divorce, procreation and abortion, child custody, and the relationship between parent, child, and state. 3 s.h. fall. *Bartlett*

529. Feminist Legal Theory (Seminar). Selected topics in feminist legal theory, with a focus on its application to child custody law. (Not offered 1988-89.)

265. Future Interests. An examination of the following considerations in noncommercial property dispositions: class gifts and other issues in will construction; powers of appointment; classification of future interests; and rules against perpetuities, accumulations, and restraints on alienation. (Not offered 1988-89.)

270. Trusts and Estates. An examination of noncommercial property dispositions, both testamentary and *inter vivos*, including the following topics: intestate succession, execution, revocation, construction, and probate of wills, creation of trusts, charitable trusts, resulting and constructive trusts, and problems in trust and estate administration. 4 s.h. spring. *Adams*

IV. FOREIGN AND INTERNATIONAL LAW

290. American Law and Legal Research for International Students (Seminar). This course consists of two components conducted simultaneously. The first is a series of lectures by members of the Law School faculty on various aspects of the legal system of the United States and may include required readings. The second is in the form of a research and writing tutorial designed to introduce international students to the techniques of case and statutory analysis as well as the tools and methods of legal research. Students are expected to complete written assignments and memoranda of law. 2 s.h. fall. *Robertson and Dibble*

514. Chinese Law and Society (Seminar). This course will survey Chinese legal thought and practice in the People's Republic of China. Particular attention is focused on the relation of law to social ideals, to social change, and to politics. The course will consider socialist theories of law, extrajudicial institutions, international law, and trade law. Prior familiarity with Chinese history or politics is unnecessary. 2 s.h. spring. *Ocko*

649. Civil Law Research (Tutorial). This tutorial will give students the opportunity to familiarize themselves with civil law materials while studying aspects of civil law in a comparative law perspective. A substantial research project will require the use of original language materials. The technique of comparative law analysis will be discussed. Insight will be provided into both the thinking and institutions found in legal systems based upon systematic codes and legal traditions that are different from those in the common law countries. Prerequisites: Comparative Law: Western Legal Traditions; reading knowledge of French or German. 2 s.h. fall. *Germain*

306. Comparative Administrative Law (Seminar). An introduction to the comparative study of the major systems of administrative law in the West. This seminar is designed to introduce students to public law institutions and practices in systems substantially different from their own, to relate this knowledge to American law in order to enhance the student's understanding of the latter, and to place the rules and institutions of administrative law within their broader political, social, and ideological contexts. It will commence with an introduction to comparative methodology in the public law context. The second part comprises a macro-survey of the British, French, American, German, and Australian systems. Finally some specific topics will be selected for more detailed, micro-comparison. Prerequisites: Prior enrollment in Administrative Law (American or foreign). 2 s.h. spring. *Baxter*

307. Comparative Law: Common Law Traditions (Seminar). This course will focus on different approaches to law in England and America, as well as differences in their traditional legal theories. In particular, it will explore the more formal approach to law in England in connection with differences in legal sources, common law, and statute law. This course will then explore the relationship between these differences and some of the institutional differences between the courts, the judges, the legal professions, and the law schools in the two countries. There are no prescribed texts but course materials will be available. 2 s.h. spring. *Atiyah*

305. Comparative Law: Western Legal Traditions. A study of civil law, common law, and socialist law, focusing on legal institutions, legal actors, their roles and backgrounds. This course will examine the shared Western legal and intellectual heritage and analyze selected problem areas. 3 s.h. spring. *Heldrich*

572. Comparative Public Law and Policy: Ethnic Group Relations (Seminar). An interdisciplinary seminar to appraise various approaches to the reduction of conflict in deeply-divided societies, primarily in Asia and Africa. Substantial attention will be paid first to the nature of ethnic identity, the sources of group conflict, and the forms and patterns it takes. Consideration will be given to methods of analyzing social science materials and utilizing them for the design of policies, laws, and institutions. Approaches considered include federalism, regional autonomy, electoral law, parliamentary and presidential arrangements, and programs to prefer under-represented ethnic groups in education, employment, and other spheres of economic activity. Emphasis will be placed on forecasting and evaluating the impact of alternative approaches. 2 s.h. fall. *Horowitz*

102. German for Legal Studies. An introduction to the terminology and basic concepts of German law. Reading and analysis of legal texts (codes, cases, contracts, wills). Communication about law and law-related issues in German. Prerequisites: 3 semesters or equivalent of German, consent of instructors. (Not offered 1988-89.)

345. International Business Transactions. This course examines various topics related to the conduct of international business. Subjects covered are international private trade, including private international contracts, dispute resolution, and letters of credit; national and international regulation of trade in goods, including the GATT; international regulation of monetary affairs through the IMF; foreign direct investment; and transfer of technology. (Not offered 1988-89.)

532. International Capital Markets and the Law (Seminar). This seminar will involve selected aspects of comparative securities regulation. Those parts of the systems of securities regulation of the United States, the United Kingdom, and Australia which deal with international problems will be studied. Some aspects of cross-national securities transactions will be looked at (e.g., U.S. and Australian investment in the Euromarkets and Australian and U.K. investment in U.S. debt and equities markets), investigating the extent to which each relevant country purports to regulate these transactions. Attention will also be given to the issuance of debt and equity securities by corporations of one of our subject countries in one of the other countries.

Another question will be the extent of regulation of multinational securities firms in each relevant jurisdiction. And some attention will be given to the regulation of certain "off-shore" practices such as insider trading, having regard to the extent of the extra-territorial application of the national laws of our three jurisdictions.

Finally, this course will examine the future of international regulation, through bilateral arrangements between securities regulators or more formal international laws. 2 s.h. spring. *Austin*

598. International Transactions with Japan (Clinical Seminar). An examination of the lawyer's role as a negotiator in seeking to resolve legal disputes with Japanese companies. This course focuses on the techniques and tactics that one encounters in negotiations with large multinational Japanese companies. The students will form a team which seeks to negotiate a settlement with a student team at the University of Tokyo in a simulated dispute involving a commercial transaction between an American company and a Japanese company. Enrollment is limited to seven students with the permission of the instructor. 2 s.h. fall. *Luney*

599. International Transactions with China (Clinical Seminar). This course examines various topics related to the conduct of international business transactions with China. Subjects covered are negotiation, contracts, dispute resolution, letters of credit, and Chinese regulation of international trade. (Not offered 1988-89.)

230. International Law. An introduction to the public international law of peace, including the nature and sources of international law; its place in national and international decision making; the roles of international organizations, states, and individuals in the international legal system; bases and limitations of jurisdiction; the utilization and interpretation of treaties and other international agreements; and some aspects of the regulation of economic activity within the international system. 3 s.h. fall. *Robertson*

232. International Organizations. An examination of the legal issues involved in the structure, functions, and operations of the United Nations and other international organizations within the international system. (Not offered 1988-89.)

557. International Taxation (Seminar). An examination of the federal income tax imposed on income earned in foreign countries either by citizens and residents of the United States or by foreign corporations that are controlled by citizens and residents of the United States. This course also includes a study of the federal income tax imposed on nonresident aliens and foreign corporations on their income derived from United States sources. Prerequisites: Personal Income Taxation, Corporate Taxation (may be taken concurrently), or permission of the instructor. 2 s.h. spring. *Gann*

647. Japanese Environmental Law and Dispute Resolution. A study of major policy and legal issues addressed by Japan in its efforts to correct environmental problems. Emphasis is on the legal, economic, social, and political factors that underlie the different responses to dispute resolution of environmental conflicts in Japan. Class will meet September 1-October 8. 2 s.h. fall. *Fujikura and Luney*

366. Jewish Law (Seminar). Study of factors (cultural and juristic) in the development of Jewish law, especially in the Talmudic and medieval periods; relationship between "religious" and "civil" law; the legal codes and the decision-making process of the rabbinic courts. Some legal texts (in translation) will be submitted to intensive examination. (Not offered 1988-89.)

235. Jurisprudence. A historical examination of the development of legal philosophy from ancient times to the contemporary period. 3 s.h. fall. *Christie*

640. Law and National Defense (Seminar). A study of military jurisdiction; martial law; law of war; civil court review of military actions; power of commanders over military installations; status of forces agreements; operations law; antiterrorist measures and legislative process. 2 s.h. fall. *Everett*

620. Law of the Sea (Seminar). An examination of the legal problems resulting from uses of the seas and the efforts made toward resolution of those problems. This seminar's focus is on the jurisdictional problems created by the competing claims of nation-states to competence as to the territorial sea, the continental shelf, the contiguous zone, economic zones, and the seabed. These claims are examined in the context of specific uses of the seas, including navigation, military, fishing, extraction of minerals, and scientific research. Prerequisite: International Law (may be taken concurrently). (Not offered 1988-89.)

516. Political Philosophy and Law (Seminar). Primary attention will be given to contemporary jurisprudence in Europe as seen through the work of Habermas. An introduction to continental political and judicial theory will be provided. The relation of contemporary thought to earlier Marxism will be explored. A paper on an assigned topic will be the basis for the grade. There are no prerequisites. This seminar should be of special

interest to students in the international studies or philosophy joint degree programs. Limited to twelve students. 2 s.h. spring. *Golding*

V. LEGAL THEORY AND HISTORY

415. American Legal History. A study of the development of American public and private law from the colonial period to the present. Examination. 3 s.h. spring. *Haagen*

514. Chinese Law and Society (Seminar). This course will survey Chinese legal thought and practice in the People's Republic of China. Particular attention is focused on the relation of law to social ideals, to social change, and to politics. The course will consider socialist theories of law, conventional criminal and civil processes, informal and extrajudicial institutions, international law, and trade law. Prior familiarity with Chinese history or politics is unnecessary. 2 s.h. spring. *Ocko*

306. Comparative Administrative Law (Seminar). An introduction to the comparative study of the major systems of administrative law in the West. This seminar is designed to introduce students to public law institutions and practices in systems substantially different from their own, to relate this knowledge to American law in order to enhance the student's understanding of the latter, and to place the rules and institutions of administrative law within their broader political, social and ideological contexts. It will commence with an introduction to comparative methodology in the public law context. The second part comprises a macro-survey of the British, French, American, German, and Australian systems. Finally some specific topics will be selected for more detailed, micro-comparison. Prerequisites: Prior or concurrent enrollment in Administrative Law (American or foreign). 2 s.h. spring. *Baxter*

307. Comparative Law: Common Law Traditions (Seminar). This course will focus on different approaches to law in England and America, as well as differences in their traditional legal theories. In particular, it will explore the more formal approach to law in England in connection with differences in legal sources, common law, and statute law. This course will then explore the relationship between these differences and some of the institutional differences between the courts, the judges, the legal professions, and the law schools in the two countries. There are no prescribed texts but course materials will be available. 2 s.h. spring. *Atiyah*

305. Comparative Law: Western Legal Traditions. A study of civil law, common law, and socialist law, focusing on legal institutions, legal actors, their roles and backgrounds. This course will examine the shared Western legal and intellectual heritage and analyze selected problem areas. 3 s.h. spring. *Heldrich*

572. Comparative Public Law and Policy: Ethnic Group Relations (Seminar). An interdisciplinary seminar to appraise various approaches to the reduction of conflict in deeply-divided societies, primarily in Asia and Africa. Substantial attention will be paid first to the nature of ethnic identity, the sources of group conflict, and the forms and patterns it takes. Consideration will be given to methods of analyzing social science materials and utilizing them for the design of policies, laws, and institutions. Approaches considered include federalism, regional autonomy, electoral law, parliamentary and presidential arrangements, and programs to prefer under-represented ethnic groups in education, employment, and other spheres of economic activity. Emphasis will be placed on forecasting and evaluating the impact of alternative approaches. 2 s.h. fall. *Horowitz*

654. Constitutional History II (Tutorial). Supervised research and writing tutorial. Selected topics in constitutional history. 1 s.h. fall and 1 s.h. spring. *Dellinger*

550. Constitutional History. A three-part course, the first part is devoted to the Constitution's early history. The second part focuses on the institutions of slavery and the law before and after the Civil War. The third part focuses on the New Deal and its relations with the Supreme Court. 2 s.h. fall, 2 s.h. spring. *Powell, Leuchtenburg, and Franklin*

359. Economic Analysis of the Law. An exploration of diverse topics in law and economics such as property rights and externalities, tort law and optimal accident prevention, use of economics by the courts, the economics of contracts, and theories of economic justice. 3 s.h. spring. *Culp*

589. Economic Analysis of Patent Law (Seminar). This seminar will draw upon concepts from microeconomic theory to explore policy issues relevant to the design and implementation of an efficient patent system. A substantial portion of this seminar will be devoted to an examination of the conflict between antitrust law and patent law concerning the terms of patent licenses. Other topics to be studied include: the litigation and settlement of infringement suits, a comparison of trade secret law with patent law, and the scope of the disclosure requirement attendant to the patent grant. Our inquiry will emphasize consideration of the effect of patent institutions on the incentive to undertake research and development, and the costs to society of providing that incentive.

The necessary economic theory will be developed in the seminar, but a background in economics would certainly be helpful. Prerequisites: Antitrust law or intellectual property law, joint degree program in law and economics, or permission of the instructor. 3 s.h. spring. *Meurer*

594. Interpretive Theory in the Legal and Literary Academies (Seminar). This seminar will explore a number of related issues as they work themselves out in the course of legal theory from 1962 (Hart's *The Concept of Law*) to the present day. In addition to readings in legal theory there will be extensive consideration of seminal works in other disciplines: J.L. Austin's *How To Do Things with Words*, Michel Foucault's *The History of Sexuality*, Jacques Derrida's "Differance," Thomas Kuhn's *The Structure of Scientific Revolutions*, and shorter readings from the works of Terry Eagleton, Edward Said, E.D. Hirsch, Richard Bernstein, and Richard Rorty. Problems and issues to be discussed will include formalism, conventionalism, intentionalism, the nature of interpretive constraint, the role of rule in law, the relationship between theory and practice, the distinction between policy and principle and between law and power, and the opposition between rhetoric and principled argument. Readings in legal theory will include works by H.L.A. Hart, Lon Fuller, Ronald Dworkin, Michael Moore, Owen Fiss, Roberto Unger, Duncan Kennedy, Mark Kelman, Thomas Heller, James Boyle, Claire Dalton, and Robert Gordon. This course will move toward consideration of the critical legal studies movement and of the emerging feminist jurisprudence. (Not offered 1988-89.)

366. Jewish Law (Seminar). Study of factors (cultural and juristic) in the development of Jewish law, especially in the Talmudic and medieval periods; relationship between "religious" and "civil" law; the legal codes and the decision-making process of the rabbinic courts. Some legal texts (in translation) will be submitted to intensive examination. (Not offered 1988-89.)

235. Jurisprudence. A historical examination of the development of legal philosophy from ancient times to the contemporary period. 3 s.h. fall. *Christie*

507. Law and Literature (Seminar). An examination of lawyers' roles and legal problems in fiction and other literary forms. This seminar may also consider the significance of contemporary theories of literary criticism for legal analysis. A paper will be required. (Not offered 1988-89.)

552. Law and Religion (Seminar). Interdisciplinary investigation of the impact of first amendment doctrine on religious organizations; the legal rights and moral obliga-

tions of clergy in questions involving the application of the testimonial privilege based on the priest-penitent relationship; state regulation of cult groups; attempts by religious groups to counter the secularization of law in areas such as abortion, sexual preference, and censorship; comparison of the concepts "punishment" and "sin." Readings will include case law, statutes, and writings by legal and religious commentators. Additionally, teams of students will study one topic in depth and make an oral presentation to the class. There is no final examination. (Not offered in 1988-89.)

527. Medical-Legal-Ethical Issues (Interdisciplinary Seminar). A seminar composed of students and faculty from the Medical, Law, and Divinity Schools that will critically consider selected pertinent issues of mutual professional interest. 2 s.h. spring. *Gianturco (medicine), Shimm (law), and H. Smith (divinity)*

516. Political Philosophy and Law (Seminar). Primary attention will be given to contemporary jurisprudence in Europe as seen through the work of Habermas. An introduction to continental political and judicial theory will be provided. The relation of contemporary thought to earlier Marxism will be explored. A paper on an assigned topic will be the basis for the grade. There are no prerequisites. This seminar should be of special interest to students in the International Studies or Philosophy joint degree programs. Limited to twelve students. 2 s.h. spring. *Golding*

556. Responsibility in Law and Morals (Seminar). Investigation of the relationship between responsibility in the law and moral blameworthiness; excuses and defenses; the roles of such concepts as act, intention, motive, ignorance, and causation. Texts: *Holmes, The Common Law*; *Hart, Punishment and Responsibility*; *Morris, Freedom and Responsibility*. 3 s.h. fall. *Golding*

316. Rights and the Environment (Seminar). This course will be a critical examination on how several philosophical and jurisprudential traditions address the issues of environmental quality and resource depletion. The traditions to be examined will include utilitarianism, Kantianism, the land ethic of Aldo Leopold, and the Aristotelian emphasis on virtue and character. A paper exploring specific issues within one or more such traditions will be required. (Not offered 1988-89.)

648. U.S. Fourth Circuit History (Tutorial). Research for the bicentennial history of the United States courts of the Fourth Circuit from 1789 to the present. Individual research and group discussion on the development of judicial institutions and research law in this southern circuit. 3-6 s.h. fall and spring. *P. Fish*

INDEPENDENT RESEARCH

Law students in their second and third year of the J.D. or LL.B. programs may undertake up to four semester-hours of independent research in any academic year if the research is approved by a faculty member. Research will be graded on a credit/fail basis. Students undertaking independent research will meet regularly with the faculty member supervising the research in order to ensure contemporaneous discussion, review, and evaluation of the research experience.

AD HOC SEMINARS

A group of five or more students may plan and conduct their own research and seminar program for not more than two semester-hours of credit (which shall be considered to be independent research within the meaning of the maximum limitation of four semester-hours of independent research each year). A request to establish such an ad hoc seminar should be addressed to the Dean at least two months before the end of the semester preceding the semester in which the seminar is proposed and contain an outline of coverage and required readings. The Dean will request a member of the faculty to evaluate the program and determine whether the proposed program has academic

merit. If approved by the Dean, a faculty member will be requested to evaluate the contribution of each participant before awarding credit. A written paper of the kind generally submitted in seminars will be required of each participant. Such seminar work shall be graded on a credit/fail basis.

COURSES IN OTHER DIVISIONS OF THE UNIVERSITY

Second- and third-year students other than joint degree candidates may take courses offered in other divisions of the University. Credit (limited to a total of nine semester-hours) toward the J.D. degree will be granted for courses of suitable academic rigor in which the student earns a grade of *P* (or its equivalent) or better. A written request for permission to enroll in a University course outside the Law School must be presented to the Associate Dean for Student Affairs. The actual grade earned in the course will be made a part of the student's permanent record, but will not enter into the Law School grade point average unless the student receives a failing grade.

Degree Programs



The First Professional Degree in Law

Juris Doctor. Upon favorable recommendation of the faculty, the degree of Doctor of Law (J.D.) will be conferred upon students who have successfully completed six semesters of law study in residence at Duke. Two semesters of law study undertaken at another accredited American law school may be counted toward the required total if the final two semesters (exclusive of a summer session) and a minimum of fifty-five semester-hours of law study are undertaken at Duke.

Students shall be deemed successfully to have completed six semesters of law study if, during a minimum of ninety academic weeks, they have satisfied the following requirements:

1. a passing grade in courses aggregating eighty-six semester-hours; and
2. a grade-point average of at least 1.80 on a 4.0 scale and status in good standing under the rules of the Law School.

Bachelor of Laws Degree. Upon favorable recommendation of the faculty, the degree of Bachelor of Law (LL.B.) will be conferred upon students who have satisfied all of the requirements listed above as necessary for the Doctor of Law degree but who do not possess a baccalaureate degree prior to completion of the program of study for the Doctor of Law degree.

Joint Degrees for Enrichment: Summer Programs

Master of Arts for Law Students. The School of Law and the Graduate School of Duke University jointly sponsor a program of study in law and several alternative disciplines, including economics, history, philosophy, political science, public policy science, and an interdisciplinary program in the humanities. The purpose of the program is to encourage the broader intellectual interests of law students and to foster dialogue between law and related disciplines. It is intended in part as an antidote for narrowing careerism that sometimes overtakes professional education. Upon satisfactory completion of the required course of study, candidates will be awarded both the M.A. and J.D. degrees.

Students enter the program in the summer prior to the first year of Law School, undertaking a portion of the first-year law curriculum. Throughout their remaining six semesters in residence, students will combine their legal studies with courses selected from the Graduate School curriculum, taking two Graduate School courses per semester during the first year and four more Graduate School courses in the final four semesters.

Master of Laws (Foreign and International Law). Since 1985, the Law School has offered the opportunity to selected J.D. candidates to pursue a Master of Laws degree emphasizing international and comparative law study contemporaneously with their study for the J.D. degree. Students accepted to the program will enter in the summer, undertaking a portion of the regular first-year curriculum with students who are pursuing the joint J.D./M.A. program described above. During the remaining six semesters of law study and in a four-week period of study at Duke's Institute of Transnational Law in Denmark during the summer after their first year of Law School, J.D./LL.M. students will complete requirements for both degrees. The courses selected for application toward the LL.M. will consist primarily of international-, comparative-, and foreign-law courses at the Law School and at the Institute of Transnational Law but may also include courses taken in related fields in other divisions of the University. The area studies program at Duke is particularly rich in courses dealing with Canada, China, Germany, and Japan.

Candidates for the LL.M. degree will be required to complete twenty credit hours of approved courses, including a significant written product, with a minimum grade point average of 2.2. Students must also demonstrate competency in at least one foreign language. Six of the twenty hours required for the LL.M. may be taken in the Graduate School or in upper-level undergraduate course work, including advanced language study; nine additional nonlaw hours are permitted to be applied toward the J.D. degree.

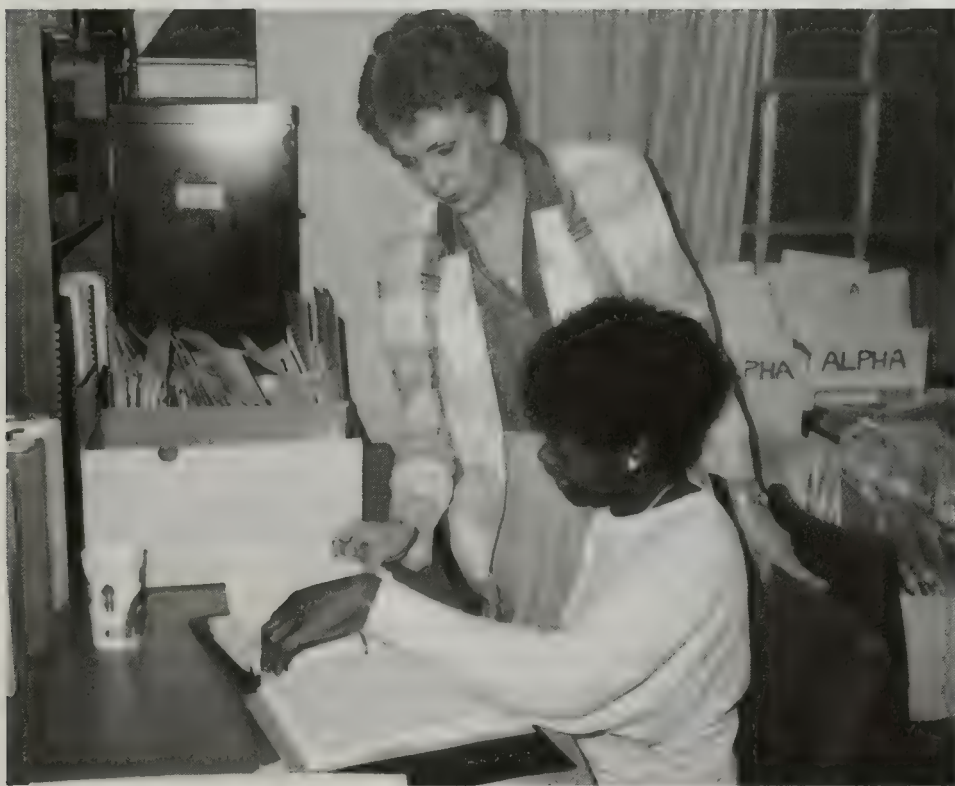
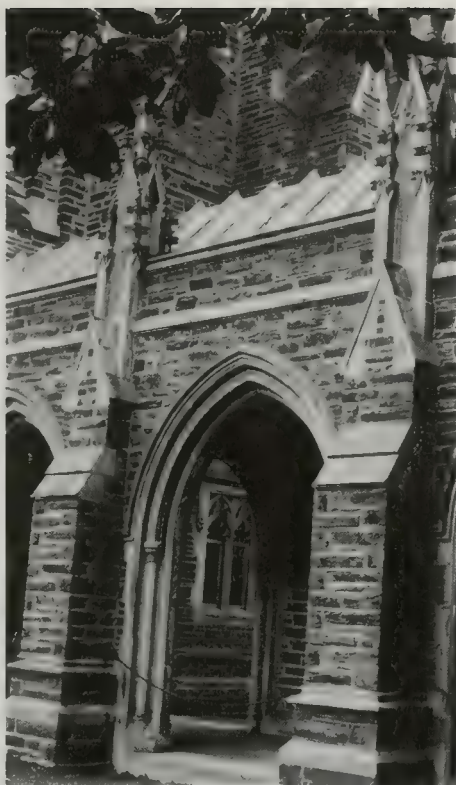
Advanced Professional Degrees in Law

The Law School program is primarily designed to serve students seeking a first professional degree in American law. Except for international students and participants in the J.D./LL.M. program described above, students are rarely admitted for the purpose of continuing the study of law at the master's or doctoral levels, although the faculty is empowered to authorize such admissions. Applications for such study by American graduates of American law schools are not sought. International students should consult the chapter of this bulletin addressed to them.

Master of Laws (LL.M.). Most international students seek the master's degree, having already been trained in the law of their own countries. To qualify for this degree, the student must successfully complete two semesters of study in residence, and must complete no fewer than twenty semester-hours. Included in the twenty credits of work must be at least two credits of individual written work completed either in a seminar or in an independent study course supervised by a faculty member. Students are also required to take a first-year course, which will bring them into close contact with a small group of American students who are facing similar academic challenges. Most foreign students will be expected to enroll in the two-credit course, American Law for International Students.

The remainder of the academic program is individually selected by the student from the curriculum offerings for first-year and upperclass students. International students will attend classes with American students and will participate in the same grading procedures. All international students will receive the guidance of an individually assigned academic adviser who is a faculty member at the Law School. The degree will be granted to students who achieve a grade point average of 2.2 on a 4.0 scale by the end of the academic year. Candidates are expected to complete the LL.M. degree in one year except in exceptional circumstances.

Doctor of Juridical Science (S.J.D.). Duke Law School accepts very few applications for the S.J.D. degree. Foreign students who have already earned a degree in American law at the master's level may apply for admission to the S.J.D. degree, however. Only students who have achieved excellent academic records throughout their law study and, in particular during the master's degree program, should seek admission. It is expected that S.J.D. candidates will be able to conduct original research and will produce a thesis that makes a contribution to legal scholarship.



Applicants to the S.J.D. program should submit all materials promptly. In order to evaluate the application, it is necessary for Duke Law School to have a proposal for the doctoral thesis and at least one sample of written work, such as a completed seminar paper. References from professors who have taught applicants at the master's level should also be provided. A transcript of all courses completed at the master's level must be received before consideration can be given to an applicant. At the discretion of the Committee on International and Comparative Studies, candidates may be asked to complete one or more semesters of course work before beginning the doctoral thesis. The program will take from two to three years to complete, depending on the time required to write the doctoral thesis.

Other Professional Degrees for Lawyers

Master of Business Administration. The School of Law and Duke's Fuqua School of Business have established a combined program of studies in law and graduate-level business administration. The aim of the program is to provide a small number of selected individuals with the opportunity to acquire an education in both law and business administration in a four-year course of closely integrated study in the two fields. Upon satisfactory completion of the required course of study, candidates will be awarded both the M.B.A. and the J.D. degrees.

The student in the M.B.A.-J.D. program begins the first-year course of study in either the Fuqua School of Business or the School of Law. If the student begins in the Law School, the first-year curriculum is the same as that of other law students; if the student begins in the Business School, the first-year curriculum is the same as that of other graduate business students. The student's second year consists of the full first-year program of the other school. In the third and fourth years of the program, the student takes a mix of courses in both schools, but mainly in the Law School.

Master of Arts in Public Policy Sciences. The School of Law and the Institute of Policy Sciences of Duke University have established a combined program of studies in law and graduate-level policy sciences. The aim of the program is to provide an opportunity for students to acquire decision-making skills and substantive policy knowledge that would be useful in either career or citizen roles dealing with problems of the public sector. Upon satisfactory completion of the required course of study, candidates will be awarded both the M.A.P.P.S. and the J.D. degrees.

The combined program requires completion of seven or eight academic semesters and one summer internship. The first year is spent exclusively in the Law School pursuing the same course of study as do other first-year law students; the second year exclusively in the Institute of Policy Sciences; and the third and fourth years primarily in the Law School. In addition, the student must select a substantive policy area in which to concentrate from among the fields of the administration of justice, communications policy, health policy, and education policy; a summer internship and thesis will be required in the chosen area. Since 1985, students also have the option of pursuing the M.A.P.P.S. through participation in the summer-entering program described above.

Doctor of Medicine. The School of Law and the School of Medicine of Duke University jointly sponsor a program of combined legal and medical education. The program provides an opportunity to acquire a full basic study of the two fields. Upon satisfactory completion of the required course of study, candidates will be awarded both the J.D. and M.D. degrees.

The student in the M.D.-J.D. program begins a six-year course of study in the School of Medicine. As in the regular M.D. program, the first year is devoted to the basic medical sciences, and the second year to the basic clinical disciplines. At this point, the student usually enters the Law School, where the first-year curriculum is the same as that of other law students. During the next three or four semesters, the student may select courses in the Law School that are of special application to medical-legal interests. After

completing law requirements, the student returns to the Medical School for elective clinical work tailored to the student's specialized needs. In addition, eighteen semester-hours, or two summer sessions, of elective basic science work are required.

Master of Health Administration. The School of Law and the Department of Health Administration have established a combined program of studies in law and health administration. The aim of the program is to provide interested persons with the opportunity to acquire an education in both law and health administration in an integrated four-year course of study in the two fields. Upon satisfactory completion of the required course of study, candidates will be awarded both the M.H.A. and the J.D. degrees.

The student in the M.H.A.-J.D. program, after completing the first two semesters of the basic M.H.A. program, enters the Law School, where the first-year curriculum is the same as that of other law students. In the third and fourth years of the program, the student continues in the Law School, completing requirements for the law degree, including two electives approved by the Department of Health Administration, and takes ten more electives approved by the Department of Health Administration, and takes ten more semester-hours of M.H.A. course work. In the Law School, the student is encouraged to emphasize courses relating to public law and administration. Opportunities for special activities in health law will be made available to the student by the Department of Health Administration over the course of the program.

The Secondary Degree in Law

MASTER OF LEGAL STUDIES

Upon favorable recommendation of the faculty, the degree of Master of Legal Studies (M.L.S.) will be conferred upon students who have successfully completed a one-year program of study in the Law School. Students specifically admitted to candidacy for this degree will pursue an individually designed curriculum including both first-year and upperclass courses. The degree may also be awarded to J.D. candidates who meet its requirements and who decide to abandon the study of law.

Students will be deemed successfully to have completed a one-year program of study in the Law School if, during a minimum of thirty academic weeks, they have satisfied the following requirements:

1. a passing grade in Law School courses aggregating thirty semester-hours, excluding cross-listed courses, and including at least one course requiring substantial supervised writing, and
2. a grade-point average of at least 2.0 on a 4.0 scale and status in good standing under the rules of the Law School.

Beyond the Curriculum



Publications

Law and Contemporary Problems. Since 1933, the Law School has published the quarterly, *Law and Contemporary Problems*. The journal is distinctive among professional legal publications in both its format and its content. Each issue is devoted to papers from a symposium on a particular topic of contemporary interest. These topics reflect an interdisciplinary perspective with contributions by lawyers, economists, social scientists, scholars in other disciplines, and public officials.

The journal is widely distributed, and its subscribers include general university libraries, governmental agencies, and foreign educational institutions, as well as the more traditional law libraries and law firms.

About twenty-four upperclass law students serve on the staff of this publication. They are responsible for the editorial work, and contribute their own writing to the symposia. Ten second-year students are selected each year on the basis of their first-year grades and the evaluations of their first-year tutorial instructors. About five new third-year students are elected on the basis of grades as well as a writing program.

Duke Law Journal. The Law School publishes the *Duke Law Journal* six times a year. Edited by students, the *Journal* is among the most prestigious and influential legal publications in the country. Approximately one-third of the contents of each issue consists of student notes dealing with current legal developments; the balance is devoted to articles and comments by professors and practitioners. Full responsibility for the selection and editing of material is vested in the *Journal's* student editorial board and its elected officers.

Membership on the *Journal* is achieved in one of two ways. Several students are selected on the basis of outstanding performance during their first year of law school. Additionally, second-year students (including those transferring to Duke from other schools) may participate in a writing program; participants demonstrating exceptional writing ability are invited to become members of the *Journal*.

Each year one *Journal* issue is devoted to topics in administrative law. Subjects of recent articles and notes reflect both the variety and depth of current legal thought. Recent issues have included articles on judicialization, use of legislative histories, and a symposium on legal education.

Alaska Law Review. Since 1983-84, Duke Law School has published the *Alaska Law Review*. Alaska has the highest number of lawyers per capita of any American state, and a range of cutting edge legal issues in the areas of natural resources law, environmental law, land use planning, economic development, state-federal relations, and Native

American rights. Since Alaska has no law school, Duke agreed with the Alaska Bar Association to provide a professional journal of law which would be responsive to the needs of Alaska's diverse legal community.

The *Alaska Law Review* is supervised by a board consisting of members of the Duke Law faculty and representatives of the Alaska Bar Association, but the student editors have primary responsibility for writing, editing, and managing the *Review*. Twelve students are chosen as editors out of each rising second-year class on the basis of first-year grades and the recommendations of the first-year writing instructors.

Student notes form the bulk of the material in the *Review*, which is published semi-annually. The articles and student notes focus on topics of interest to the practicing attorney in Alaska.

Duke Law Magazine. The Law School publishes a semiannual review of the intellectual life of the school entitled *Duke Law Magazine*. Student-authored work is sometimes included, along with faculty essays and reports of events of academic significance to the school.

Honorary, Professional, and Social Organizations

Order of the Coif. The Order of the Coif is a national legal scholarship society with a local chapter at Duke University School of Law. Its purposes are "to foster a spirit of careful study and to mark in a fitting manner those who have attained a high grade of scholarship." Election is restricted to students standing scholastically in the highest 10 percent of the graduating class.

The Duke Bar Association. The Duke Bar Association coordinates the professional, social, and other extracurricular activities of the student body. The association resembles in its composition and purpose both a university student government and a professional bar association. It takes care of student grievances and serves as a mediator between students, faculty, and the administration. The association oversees all student organizations, publicizes Law School activities, sponsors athletic and social programs, and disburses its dues funds among the school's organizations.

Legal Research Program. The Legal Research Program, supervised by a student editorial board, provides second- and third-year students with an opportunity to prepare legal memoranda on actual problems submitted by practicing lawyers, judges, or legislative committees.

Moot Court Board. The Moot Court Board is composed of second- and third-year students who are chosen on the basis of their performances in intramural moot court competition. The board supervises the Hardt Cup and the Dean's Cup Competitions. In addition, the board provides personnel for teams entering intercollegiate competition.

International Law Society. Membership in the Duke International Law Society is open to the entire law student body. The society sponsors an annual distinguished speaker series with lecture topics ranging from the law of warfare to peace negotiations, from the law of the seas to space law. The scope is limited only by the interests of the society members and the student body at large. The society is currently exploring joint programs with local law schools, overseas study alternatives, and contributorships to international law journals throughout the country. Other activities include participation in the annual Philip C. Jessup International Moot Court Competition and attendance at conferences sponsored by the Association of Student International Law Societies.

Women's Law Society. Women's Law Society provides a central organization through which women law students can meet to form friendships and to share problems unique to women in the legal profession. The group works as a clearinghouse for information in areas of particular concern to women through bulletin board notices and informal presentations at faculty-student receptions. The group also communicates with

women's groups in other law schools in North Carolina, maintains memberships in several state and national organizations, and teaches an undergraduate course on women and the law.

Current and prospective women law students are encouraged to contact members of the Women's Law Society for information about the organization, Duke Law School, or the legal profession.

Deans' Advisory Council. Members of the Deans' Advisory Council are selected by the several deans of the Law School. Selection for membership reflects the collective judgment of the deans that the student is unusually deserving of trust and respect, and manifests traits for which the school would like to be known. The work of the council is to assist the administration of the Law School in its public contacts. Members represent the school in dealing with admissions applicants, placement interviewers, alumni, supporters, and guests. Membership in the organization generally continues after graduation; alumni members continue to assist in the same areas of administrative work. Membership involves a substantial commitment of time and energy to the welfare of the school.

Black Law Students Association. The Law School chapter of BLSA is affiliated with the regional and the national BLSA. The aims of the local chapter are to provide a responsive student organization to aid the individual black law student at Duke and to instill a greater awareness of and commitment to the needs of the black community.

American Bar Association's Law Student Division. The ABA/LSD, active in virtually every law school in the country, is the way for law students to make contact with the nation's largest professional association for lawyers, the American Bar Association. A member of the Fourth Circuit, along with the law schools of Virginia, West Virginia, and North and South Carolina, Duke has played a strong leadership role in the circuit as well as at the national level of the division. A small enrollment fee entitles the Law Student Division member to a subscription to the ABA magazine *Student Lawyer*, to inexpensive ABA-sponsored health insurance, and to information about the ABA's programs and publications on specialized areas of the law. The ABA/LSD also promotes various advocacy and essay contests throughout the school year.

Forum for Legal Alternatives. The FLA is made up of students from all three classes who are interested in information about less traditional legal careers. In the past few years the FLA has brought lawyers to the Law School to speak on legal services, environmental law, union labor law, child advocacy, government work, and setting up a solo practice after law school. The group works with the Placement Office to provide information on employment opportunities in the public interest fields and maintains contacts with the North Carolina chapter of the National Lawyers' Guild and other public interest and civil rights groups in the area. As a respite from its serious work, the FLA has a potluck dinner each semester.

Student Funded Fellowship. The SFF provides living-expense stipends to several students each year who work in nontraditional or public interest legal jobs. Law students and members of the faculty and administration contribute to the SFF. The fund is then allocated to recipients by the fellowship's Board of Directors.

Voluntary Income Tax Assistance. For many years law student volunteers have provided tax preparation assistance to low-income people in the community. Two or more sites in Durham are staffed by the Law School for eight weeks prior to the tax filing deadline.

Prisoners' Rights Project. The PRP is a volunteer organization of law students. Its goals include educating prisoners about the law and criminal procedure, promoting their rights to humane conditions, and assisting them in preparing postconviction motions.

Volunteers answer prisoner questions about court procedure, sentencing classification, privileges, discipline, medical care, and conditions of confinement generally.

National Lawyers' Guild, Student Chapter. The National Lawyers' Guild is an organization of lawyers, legal workers, law students, and jailhouse workers with over 7,000 members in the 97 chapters throughout the United States. The guild was founded in 1937 as a multi-racial and progressive alternative to the American Bar Association.

Duke's student chapter aims to educate its members and the Duke University community about the most significant battles for political, economic, and social change. The group opposes all forms of racial and sexual discrimination. The guild plans to hold forums and workshops on a wide range of social issues.

Federalist Society. The Duke chapter of the Federalist Society is a group of conservative and libertarian students interested in the current state of legal order. The society is founded on the principles that the state exists to preserve freedom, that the separation of governmental powers is central to our Constitution, and that it is the province and duty of the judiciary to say what the law is, not what it should be. The society seeks both to promote an awareness of these principles and to further their application through its activities. In the past, the group has hosted distinguished judges and other speakers and has sponsored debates between members of the academic community. Membership is open to interested students.

Entertainment and Recreation

Various recreational facilities are available on campus to students. The Bryan Center contains the Reynolds Theater and the Schaefer Laboratory Theater, as well as a film theater, an art gallery, banquet rooms which are available to students at minimal cost, and lounges and patios for student meetings.

Students of the Law School are also entitled to use the University gymnasiums, tennis courts, swimming pools, golf course, and other facilities. Within a short distance from the campus one may enjoy horseback riding, woodland hiking, and sailing. Other opportunities for physical activity are available in the intramural program, as well as through such activity groups as the outing, sailing, and cycling clubs. North Carolina's mild climate makes most outdoor sports possible during much of the school year. The Appalachian ski slopes are about three and a half hours to the west, the Outer Banks the same distance to the east.

University athletic contests are held on the campus at various times during the academic year. Duke is a member of the Atlantic Coast Conference.

Employment Opportunities

The study of law is demanding. It is designed to occupy the full time of the student and calls for the highest level of concentration. It is unwise for students to dilute their efforts by outside work, especially during the critical first year of study.

For those who find some outside earnings necessary to meet the expense of studying law at Duke and who qualify for the college work/study program under applicable federal regulations, arrangements have been made to provide some part-time employment in the Law School. A number of positions in the law library are filled by law students. Students are often employed in their second and third years as research assistants for faculty members. The University maintains a general placement office to aid in finding employment, and law students may serve as undergraduate residence advisers if they have been at Duke one year or have previously held such positions.

Law student spouses who seek employment will find opportunities as good here as in most other areas of the country. Laboratory and technical workers, secretaries, computer programmers, technicians, and medical personnel are among the workers most in demand in this area. Spouses who are teachers will find the names of the superin-

tendents of schools in nearby districts listed in the *Duke Law School Handbook* (see below). The University personnel office and the Medical Center personnel office assist interested persons on locating suitable employment on campus.

The Duke Law School Handbook

Incoming students are supplied with a handbook containing useful information which is compiled and updated each year by the DBA. Topics covered include housing, transportation, living needs and expenses, Law School facilities, student health facts including information on the University's Counseling and Psychological Services, and data for married students such as educational and employment opportunities. Also included in the handbook is information on facilities for the handicapped, for whom the school makes special provision as required above and beyond its already considerable accessibility.

Law Library



The written law in its variety of forms is the basic working material of the practicing attorney and the legal scholar. At Duke, law students utilize the resources of the library collection and the skills of the highly trained library staff in the development of research skills that will serve them throughout their professional careers.

The Duke Law Library is more than a repository of books. Recognizing its place at the center of the Law School community, the library offers accessible, well-organized collections and services. Both group and individual study areas are arranged in proximity to the most-used materials. The entire collection of over 370,000 volumes is a major research collection designed for the educational needs of law students. It features comprehensive coverage of basic Anglo-American primary source materials, including nearly all reported decisions of federal and state courts, as well as current and retrospective collections of federal and state codes and session laws. Digests, legal encyclopedias, and other indexing devices provide access to the primary documents. Materials subject to heavy student use are available in multiple copies. Comprehensive collections of records and briefs from the United States Supreme Court, the Fourth Circuit Court of Appeals, and the North Carolina Supreme Court and Court of Appeals are maintained in microform and hard copy. The library maintains an extensive and continuously expanding collection of legal treatises. These are organized in the familiar Library of Congress classification system and are accessible through the Duke University public online catalogue and the traditional card catalogue for older materials. Special treatise collections are maintained in several subject areas, including the George C. Christie collection in jurisprudence and the Floyd S. Riddick collection of autographed senatorial material.

The periodical collection includes extensive runs of all major legal research journals, bar association publications, institute proceedings, and newsletters. The library is a selective depository for United States government publications, with concentration on congressional and administrative law materials. Hard copy document holdings are supplemented by an extensive microform collection, which includes complete runs of the *Congressional Record* and the *Federal Register*, all post-1970 congressional materials, congressional committee prints dating back to the mid-nineteenth century, and a number of special subject collections. In addition, law students have access to the extensive documents collection of the main campus library. Important state government documents are collected in both hard copy and microform.

In addition to its Anglo-American holdings, the library holds substantial research collections in foreign and international law. The foreign law collection is extensive in coverage, with concentrations in Canadian, other commonwealth, and European law and business law materials. The international law collection is strong in primary source and treatise material on both private and public international law topics.



But the success of a law school library depends as much on the quality of the services it provides as on the strengths of its collection. At Duke, the library staff includes nine librarians with graduate degrees, five of whom hold additional degrees in law. The staff takes its role in the legal education process seriously. The law-trained staff members serve as instructors for the legal bibliography segments of the first-year research and writing program and regularly offer seminars in topics of advanced legal research. The staff produces a series of research guides, a newsletter, and various current-awareness services. It also maintains bibliographies of books and articles by Law School faculty members. In 1984, these library publications were honored with the American Association of Law Libraries' Law Library Publications Award. Presently, AALL's quarterly journal, *Law Library Journal*, is edited at Duke.

The library actively encourages computer applications in the law school curriculum. The library is a member of the CALI (Computer-Assisted Legal Instruction) Center. Students use CALI exercises related to their law school courses.

The staff now provides access to a variety of computerized information sources. The two major legal databases, LEXIS and WESTLAW, are used for research and training purposes. In addition, an increasing number of full-text and bibliographic databases and comprehensive indexing services are available through NEXIS, VU-TEXT, and DIALOG, as well as the CCH Electronic Legislative Search System. The latest electronic index is LEGALTRAC, an index to legal periodicals in new format, combining computer and laser-disk technologies. It is accessed through an IBM-PC.

The library is part of the Law School and is administered independently of the main library system at Duke. The Duke University Libraries (Perkins, Law, Business, and Medical) contain one of the major research collections in the country, holding well over 3,000,000 volumes.

To obtain materials not available locally, the law library staff makes use of a computerized interlibrary loan network, which allows retrieval of information from libraries throughout the country. Cooperation with other libraries, both on and off campus, ensures that materials are available when needed for the Law School community.

The staff of the Law Library in 1988-89 includes the following professionals:

Richard A. Danner, B.A., M.S., J.D., *Director of the Law Library and Professor of Legal Research*

Hope E. Breeze, B.A., M.L.S., *Head of Technical Services*

Michael G. Chiorazzi, B.A., J.D., M.L.L. *Reference Librarian and Senior Instructor in Legal Research*

Janeen J. Denson, A.B., M.S.L.S., *Circulation Librarian*

Claire Germain, B.A., LL.B., M.C.L., M.L.L., *Assistant Librarian for Information Services and Senior Lecturer in Comparative Law and Legal Research*

Betty Hertel, B.S., M.L.S., J.D., *Reference Librarian and Instructor in Legal Research*

Doris M. Hinson, B.A., M.L.S., *Cataloger*

Janet L. Sinder, A.B., J.D., M.S., *Reference Librarian and Instructor in Legal Research*

Gretchen P. Wolf, B.S., M.S., *Acquisitions Librarian*

International Students



International Law Study at Duke

International students are very welcome at Duke Law School. The J.D. program has a number of international students, most heavily represented by students from the People's Republic of China. The LL.M. program, which is comprised of approximately twenty international students, has participants from countries throughout the world. Highly qualified international students who seek exposure to the American legal system and the legal profession are encouraged to apply.

Persons considering such study should recognize the difficulty of studying a foreign legal system. No other academic discipline is so inculturated and makes such enormous demands on the intellectual adaptability of the student. International students at Duke must, of necessity, enter into the regular program designed for very able professional students who are presumed to possess a substantial background in their own American culture. Law study makes substantial demands on the language skills of even those who are native users of English.

Duke Law School makes a special effort to help international students with their adaptation to the United States and, in particular, to Duke. The assistant dean for international studies serves as admissions officer for foreign students and is also available to assist with housing, immigration, and adjustment problems. The Duke University International House sponsors a week-long orientation for all foreign students new to Duke, and students are also encouraged to participate in the Law School orientation for all entering students. International students will receive academic counseling as well as instruction in American techniques of legal research and writing.

Degree Programs for International Students

International students may apply to the following degree programs:

Juris Doctor (J.D.). Foreign students may be admitted for the J.D. degree. This program should only be attempted by students who find themselves ready to handle the difficulties of an American legal education. Such candidates must present satisfactory scores on both the Law School Admission Test (LSAT) administered to American applicants and the Test of English as a Foreign Language (TOEFL). Candidates who have earned professional law degrees in systems not dissimilar to the American system may be able to receive credit for as much as one-third of the course work ordinarily required for the completion of the J.D. program. All inquiries about the J.D. program should be directed to the Law School Office of Admissions.

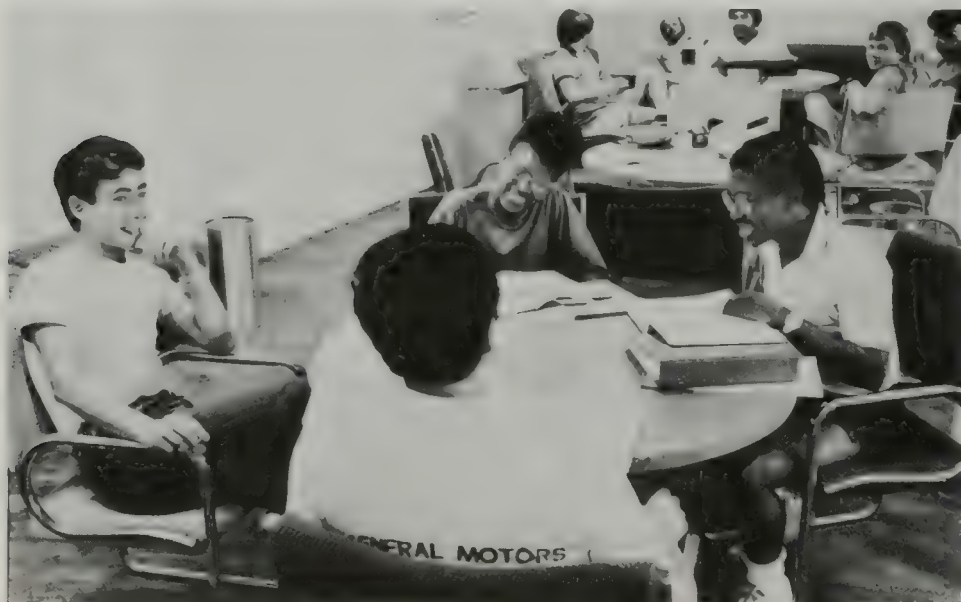
Master of Laws (LL.M.). Most international students seek the master's degree, having already been trained in the law of their own countries. To qualify for this degree, the student must successfully complete two semesters of study in residence, and must

complete no fewer than twenty semester-hours. Included in the twenty credits of work must be at least two credits of individual written work completed either in a seminar or in an independent study course supervised by a faculty member. Students are also required to take a first-year course, which will bring them into close contact with American students who are facing similar academic challenges. Most foreign students will be expected to enroll in the two-credit course, American Law for International Students.

The remainder of the academic program is individually selected by the student from the curriculum offerings for first-year and upperclass students. International students will attend classes with American students and will participate in the same grading procedures. All international students will receive the guidance of an academic adviser who is a faculty member at the Law School. The degree will be granted to students who achieve a grade point average of at least 2.2 on a 4.0 scale by the end of the academic year. Candidates are expected to complete the LL.M. degree in one year except in exceptional circumstances.

Doctor of Juridical Science (S.J.D.). Foreign students who have already earned a degree in American law at the master's level may apply for admission to the S.J.D. degree. Only students who have achieved excellent academic records throughout their law study, and in particular during the master's degree program, should seek admission. It is expected that S.J.D. candidates will be able to conduct original research and will produce a thesis that makes a contribution to legal scholarship.

Applicants to the S.J.D. program should submit all materials promptly. In order to evaluate the application, it is necessary for Duke Law School to have a proposal for the doctoral thesis and at least one sample of written work, such as a completed seminar paper. References from professors who have taught applicants at the master's level should also be provided. A transcript of all courses completed at the master's level must be received before consideration can be given to an application. At the discretion of the Committee on International and Comparative Studies, candidates may be asked to complete one or more semesters of course work before beginning the doctoral thesis. The program will take from two to three years to complete, depending on the time required to write the doctoral thesis. Doctoral students will be supervised by a faculty member who teaches in the thesis topic area. The doctoral committee will be composed of the thesis supervisor and two other faculty members in the same or related areas of law. It should be noted that very few applicants gain admission to the S.J.D. program.



Admission of International Students

A separate admission process is maintained for foreign students applying to the LL.M. or S.J.D. programs. Prospective applicants should write for forms and information to Judith Horowitz, Assistant Dean for International Studies. An application fee of \$45 is charged and should accompany the application. Students from countries where English is not the principal language are required to present a satisfactory score on the Test of English as a Foreign Language (TOEFL), which is administered by the Educational Testing Service of Princeton, New Jersey. For further information, appropriate officials at the student's university should be consulted.

Applications and supporting material should reach Duke by February 15. Students who sit for the TOEFL later than January should be advised that it often takes up to two months for examination results to reach Duke. Late TOEFL scores may seriously delay or even jeopardize admissions decisions. Applicants will be notified of acceptance beginning in late February. The LL.M. class is normally filled by late April. It is to the applicant's advantage to apply early. Admission is for the fall semester only.

Financial Aid

Duke can offer limited financial assistance to foreign students. Foreign applicants will be required to supply assurance of their ability to pay their tuition and living expenses. A deposit fee of \$500 will be required to confirm acceptance of a position at the Law School.

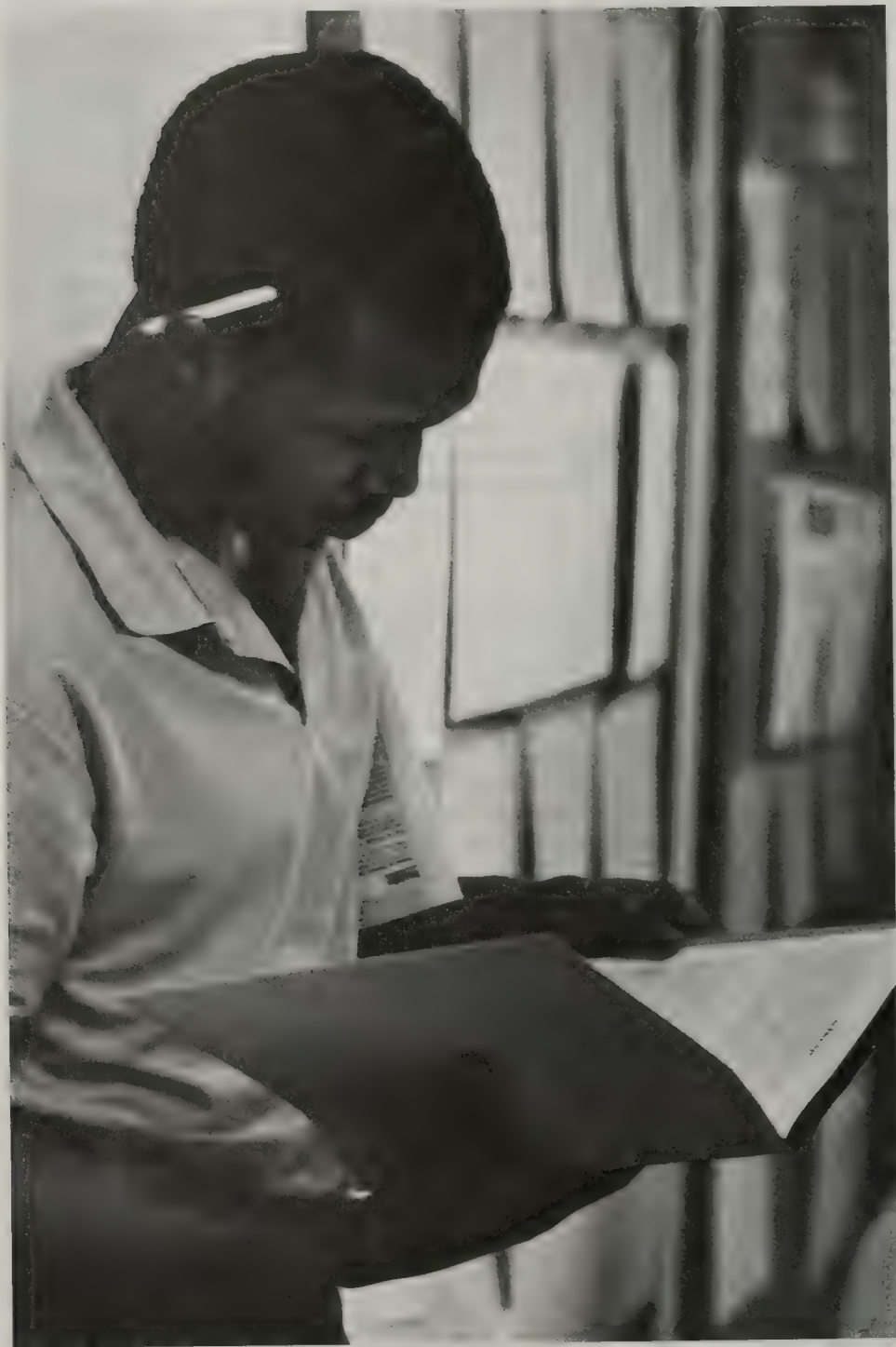
Housing

Duke University maintains furnished apartments in which many graduate and professional students reside. It is usually possible to arrange to have a single international student share an apartment with one or more American students. In addition to Duke University housing, there is an abundance of well-appointed, relatively inexpensive housing in the area. The cost of living in Durham is quite reasonable.

Placement with American Law Firms

The Duke program for international students is directed primarily to those who will return to their home countries upon receipt of their degrees. Some students have found, however, that their exposure to the American legal system is enriched by a short internship with an American law firm before they return home. The placement office offers assistance to international students and maintains a list of American law firms that have expressed an interest in interviewing foreign students, and it will assist in scheduling interviews. The Law School and the Duke visa office will help students to obtain permission for practical training. It cannot, of course, guarantee students that they will have success in locating a position with an American law firm. Many firms give preference to students with the J.D. degree.

Placement



Placement Services

The advantages of attending a school the size of Duke extend into the placement process. An active placement office that includes the Director of Placement and two staff members is happy to help students in all aspects of their job search. The placement office is involved in a variety of activities designed to assist students seeking employment. These activities include coordination of an extensive on-campus recruiting season, maintenance of materials on legal careers, available positions, bar memberships, and related matters and assisting students and recent graduates throughout the year in the job placement process.

Since the student body is relatively small, the placement office is able to provide individual attention to students throughout their tenure at the Law School. Services provided by the placement office include: individual assistance in resume and cover letter writing; personal counseling on career choices, job opportunities, and strategies; workshops and seminars on everything from values clarification to firms in "off-Broadway" cities; and information regarding the on-campus interviewing process.

Because of Duke's national prominence and the diverse background of the student body, over 400 employers from around the country visit the campus each fall to interview approximately 375 second- and third-year students. In addition, almost 1,000 employers a year write to request student resumes. With the wide variety of employment possibilities available, a substantial number of students in each of these classes receive offers of employment. Generally speaking, about two-thirds of the students will find employment in a broad "eastern corridor" that stretches from Boston to Miami. The remaining third of the students find jobs in most of the remaining midwestern and western states. Approximately one in ten students begin their professional careers as judicial clerks, including several who serve on the staffs of federal appellate judges. A large number of students accept employment with private law firms, but there is a steady core of students whose interests range among public service organizations, governmental agencies, business corporations, and other areas. Beginning salaries exceed \$50,000 in the largest cities, but the median for first jobs is substantially lower. By graduation of each year approximately 90 percent of both the second- and third-year classes have found employment. Since jobs continue to be available after that time, the hiring rate continues to improve over the summer. The placement office makes every effort to assist students in finding the kind of legal employment they seek.



First-year students most actively seek employment during the late fall and spring semesters. While first-year students do not participate in the fall on-campus interviewing program, there is an on-campus program between January and March that is primarily for these students. The number of on-campus interviews for first-year students has tripled in the last few years. In addition, listings of employers who seek first-year clerks are available throughout the semester. The placement office also collects lists of legal internships and law-related summer volunteer opportunities that may be of interest to first-year students. The placement office encourages students to explore the variety of professional opportunities available to them and seeks to instruct them in effective job-hunting as well. Of the 157 students from the Class of 1989 reporting on summer employment after the first year, 97 percent reported employment with 96 percent of that employment being law related.

It should be noted, however, that the students themselves are primarily responsible for finding their own employment. They must be willing to devote a large amount of their time to letter-writing and to interviewing. The Law School diligently attempts to assist its graduates, but the ultimate responsibility rests with each student.

Below are placement statistics for the three most recent graduating classes:

	1984-85	1985-86	1986-87
Inquiries Received	714	737	708
Interviews on Campus	387	430	425
Geographical Distribution			
Northeast	117(30%)	149(35%)	167(39%)
Southeast	144(37%)	137(32%)	123(29%)
Midwest	58(15%)	66(15%)	57(14%)
West	69(18%)	78(18%)	78(18%)
Student Information			
Graduates Reporting Employment as of June 30	91% =	92%*	90% +
Median Starting Salary	\$35,000	\$38,359	\$44,175
Geographical Distribution			
Northeast	52(34%)	66(44%)	71(44%)
Southeast	62(40%)	45(30%)	39(24%)
Midwest	15(10%)	19(12%)	23(14%)
West	25(16%)	21(14%)	27(17%)
Nature of Employment			
Private Firms	115(72%)	116(77%)	124(78%)
Business/Corporations	6(4%)	4(3%)	0(0%)
Government	4(2%)	6(4%)	7(4%)
Judicial Clerkships	22(14%)	18(12%)	23(14%)
Public Service/Public Interest ..	1(1%)	1(1%)	1(1%)
Military	7(7%)	3(2%)	1(1%)
Academic	4(2%)	1(1%)	2(1%)

= Class of 1985 had 181 members

* Class of 1986 had 165 members

+ Class of 1987 had 178 members

Alumni Affairs



Alumni Affairs

Though Duke Law School graduates are dispersed across the country and throughout the world, their relationship with the Law School remains close. The Duke Law School Alumni Office, working with the Duke Law Alumni Association, links the school's approximately 4,800 alumni with the Law School and with each other.

Law Alumni Association. Every alumnus/a of the Law School is a member of the Law Alumni Association. The Law Alumni Council, its governing body, consists of sixteen members, who serve three-year rotating terms. The Law Alumni Association is not a fund-raising organization. The Council does, however, solicit dues from the alumni and oversee the expenditure of these funds for alumni programs.

Reunions and Law Alumni Weekend. The Law School Alumni Affairs Office organizes reunions by class at five-year intervals. The reunions are held in the fall on Law Alumni Weekend to which all law alumni are invited. A reunion chairperson from each class is responsible for helping to plan reunion activities and encouraging classmates to attend. Festivities include an all alumni cocktail party, a professional program, a football game, a barbecue, and a reception and dinner for reunion classes. At the 50th reunion, alumni are inducted into the Half-Century Club.

In 1985, the Law Alumni Council established the Charles S. Murphy Award to be presented during Law Alumni Weekend to an alumnus or alumna whose devotion to the common welfare is manifested in public or quasi-public service or in dedication to education. Charles S. Murphy, a North Carolina native, devoted himself to public service, serving in the administrations of Truman, Kennedy, and Johnson as well as serving as a Duke trustee and member of the Law School Board of Visitors.

Alumni Publications. All Duke alumni receive the *Duke Magazine*, an award-winning alumni publication which provides news and features about University programs, faculty research, student life, and alumni activities. Through the magazine, alumni are informed about each other, campus changes, and issues affecting higher education generally and Duke specifically.

The Law School Alumni Affairs Office publishes the *Duke Law Magazine* twice yearly. It is sent to all Duke Law alumni. Through the magazine alumni are informed of faculty work on important legal issues. A newly expanded alumni section includes an alumni notes section through which alumni can keep each other informed of milestones in their professional and personal lives. It also includes articles on different segments of our alumni body and profiles of some interesting individuals.

The Law School Alumni Affairs Office also publishes an annual report for the Law School at the end of each fiscal year, which is sent to all law alumni. It includes reports from all offices and departments of the Law School and is an excellent way to bring everyone up to date regarding changes at the Law School.

The Law Alumni Association commissions a general directory of all Duke Law alumni every five years. The current directory is to be distributed to all law alumni who paid dues to the Law Alumni Association or made a contribution to the Law School Annual Fund Campaign. As a supplement to the general directory, local directories for areas with an organized local association will be produced by the Alumni Affairs Office.

Local Associations. The Law School Alumni Affairs Office coordinates and supports the activities of local law alumni associations. The purpose of the local association program is to establish and maintain a sense of community and identity with the Law School and among our alumni. We also hope to increase alumni awareness of the progress and needs of the school. These objectives are pursued through social and educational events for alumni which are attended by a Law School representative. The Law Alumni Association dues help defray the expense of these events. The alumni dues also pay for alumni directories for areas with local associations.

Besides serving a social and networking function for local alumni and encouraging a sense of community, these groups also provide some practical assistance to the Admissions and Placement Offices of the Law School. An admissions committee or representative may be called upon to help recruit suitable applicants from undergraduate schools in the area. A placement committee or representative may be called upon to counsel and aid students seeking employment in the area.

The Law School is also beginning to pursue a strong alumni relations program with our growing international alumni body. The Law School Alumni Affairs Office sponsors an annual reception for current international students to explain alumni and development programs. There are organized local associations in Tokyo and Europe. Alumni social events held in Japan and in Europe have been very well attended.

Conference on Career Choices. In response to both student and alumni interest, the Law Alumni Association and the Duke Bar Association have agreed to jointly sponsor a Conference on Career Choices, which is coordinated by the Law School Alumni Affairs Office. The program, a series of panel discussions featuring alumni in various legal fields, is designed to provide information regarding different legal careers and how personal objectives may relate to career choices. The conference concludes with a cocktail reception sponsored by the Law Alumni Association for all students and conference participants in honor of the graduating class.

In addition to coordinating this conference, the Law School Alumni Affairs Office is involved with students and student organizations throughout their law school careers, and, in fact, ushers them into alumni status by coordinating the Law School activities for Graduation Weekend. Students are invited to attend all alumni events at the school and make a significant contribution to the Annual Fund Campaign during the annual telethons. The Law School Alumni Affairs Office is also available to individual students and to student organizations who wish to contact alumni.

Alumni Admissions Interviewing Program. In 1985-86, the Law School began a pilot program which invites our alumni to help in the application and admissions process. The program, which is administered by the Law School Admissions Office, involves alumni in recruiting, interviewing, and communicating with prospective students.

Annual Fund Campaign. Gifts made by alumni and other friends of the Law School to the Duke Law School Annual Fund provide flexible financial support to the school. These funds undergird the operating budget and pay for items that endowment funds, often designated for specific purposes, do not address and that tuition revenues fall short of covering. Duke Law alumni are very responsive to the Annual Fund Campaign. Over 40 percent of the law alumni are donors to the Law School Annual Fund.

A special group of alumni, known as the Council for the Annual Fund, serve as an alumni advisory council for the annual fund drive. This group presently consists of approximately forty alumni chosen from those areas of the country where we have or are sending a significant number of alumni.



Appendix A

Former Schools of Duke Law Students

Albion College	1	Hobart College	1
Allegheny College	1	Hofstra University	1
Alma College	2	Hood College	1
Amherst College	6	Howard University	1
Arizona State University	1	Illinois Wesleyan University	1
Assumption College	1	Indiana University	10
Auburn College	2	John Carroll University	1
Austin College	2	Johns Hopkins University	4
Baldwin Wallace College	1	Juniata College	1
Baylor University	7	Kalamazoo College	3
Bernard M. Baruch College	1	Lafayette College	2
Bob Jones University	1	LaSalle University	3
Boston College	6	Lehigh University	1
Boston University	2	LeMoyne College	1
Brandeis University	3	Louisiana State University	1
Brigham Young University	1	Loyola University	2
Brown University	8	Marquette University	2
Bryn Mawr College	1	Massachusetts Institute of Technology	1
Bucknell University	1	Miami University	1
Calvin College	1	Michigan State University	1
Campbell University	1	Middlebury College	1
Carnegie Mellon University	1	Mills College	1
Carson Newman College	1	Mississippi State University	1
Case Western Reserve University	2	Montclair State University	1
Catholic University	1	New York University	4
Clark University	1	Norbert College	1
Colgate University	1	North Carolina State University	3
College of Charleston	1	North Park College	1
College of the Holy Cross	1	Northeast Missouri State University	1
College of William & Mary	3	Northeastern University	4
Colorado College	1	Oberlin College	1
Columbia Bible College	1	Occidental College	2
Columbia University	5	Ohio Northern University	1
Cornell University	5	Ohio State University	1
Dartmouth College	11	Pacific Lutheran University	2
Davidson College	4	Pennsylvania State University	6
DePaul University	1	Pepperdine University	1
Dickinson College	1	Perdue University	4
Drury College	1	Pomona College	1
Duke University	47	Princeton University	15
Eastern Kentucky University	1	Queens College	2
Emory University	11	Rhodes College	1
Emory & Henry College	1	Rice University	3
Emporia State University	1	Rutgers College	1
Fairfield University	2	St. Joseph's University	1
Florida International University	1	St. Lawrence University	1
Florida State University	5	St. Louis University	1
Fordham University	2	San Diego State University	1
Georgetown University	9	Seton Hall University	1
George Washington University	3	Skidmore College	1
Grace College	1	Southern College of Seventh Day Adventists	1
Grinnell College	2	Southern Methodist University	2
Grove City College	1	Southwestern University	1
Hamilton College	1	Stanford University	7
Harding University	1	State University of New York at Albany	3
Harvard University	11	State University of New York at Binghamton	3
Haverford College	2	State University of New York at Brockport	1
Hillsdale College	2	State University of New York at Buffalo	2

State University of New York at Genesco	1	University of North Carolina at Asheville	1
State University of New York at Stony Brook	1	University of North Carolina at Greensboro	1
Syracuse University	1	University of North Carolina at Chapel Hill	22
Texas A&M University	2	University of Northern Colorado	1
Texas Christian University	1	University of Notre Dame	18
Texas Technical University	2	University of Pennsylvania	18
Temple University	1	University of Pittsburgh	1
Trinity College	3	University of Puget Sound	1
Trinity University	2	University of South Carolina	2
Transylvania University	1	University of South Florida	1
Tufts University	6	University of Southern California	1
Tulane University	2	University of Tampa	1
Union College	2	University of Tennessee	1
University of Alabama in Huntsville	1	University of the South	1
University of California at Berkeley	4	University of Tulsa	1
University of California at Los Angeles	1	University of Texas	5
University of California at San Diego	1	University of Vermont	1
University of Central Florida	1	University of Virginia	9
University of Chicago	1	University of Washington	3
University of Cincinnati	1	University of Wisconsin	5
University of Colorado	3	United States Merchant Marine Academy	1
University of Dayton	1	Utah State University	2
University of Delaware	1	Vanderbilt University	9
University of Florida	9	Villanova University	2
University of Georgia	2	Virginia Wesleyan College	1
University of Hawaii at Manoa	1	Wabash College	1
University of Illinois	5	Wake Forest University	4
University of Iowa	1	Washington University	2
University of Kansas	3	Wellesley College	5
University of Kentucky	1	Wesleyan University	1
University of Louisville	1	West Virginia University	1
University of Maryland	2	Westminster College	1
University of Massachusetts	2	Wheeling College	1
University of Miami	5	Whitworth College	1
University of Michigan	11	Williams College	6
University of Missouri	3	Wittenberg University	2
University of Nebraska	1	Yale University	12



Appendix B

Foreign Universities

Beijing Foreign Languages Institute	4	Universidad Javeriana	1
Beijing Normal University	1	Universite de droit Paris	11
Beijing University of International Business & Economics	1	University of Aarhus	1
Central Police College	1	University of Alberta	1
Fudan University	3	University of Copenhagen	1
Goethe University	2	University of Ghana	1
McGill University	2	University of Leiden	1
Nanterre University	1	University of Liege	1
National Chung-Hsing University	1	University of Louvain	1
National Taiwan University	1	University of Manitoba	1
Peking University	2	University of Tokyo	4
People's University of China	1	University of Santa Maria la Antigua	1
Universidad Catolica	1	Taiwan University	1
		Tel-Aviv University	2

Home States of Duke Law Students

Alabama	8	Missouri	12
Alaska	1	Nebraska	2
Arkansas	3	Nevada	1
California	14	New Jersey	34
Colorado	2	New Mexico	2
Connecticut	18	New York	78
Delaware	2	North Carolina	52
District of Columbia	2	North Dakota	1
Florida	47	Ohio	19
Georgia	18	Oklahoma	2
Hawaii	4	Idaho	3
Oregon	2	Illinois	29
Pennsylvania	34	Indiana	5
Rhode Island	3	Iowa	4
South Carolina	8	Kansas	5
South Dakota	2	Kentucky	11
Tennessee	6	Texas	13
Louisiana	6	Utah	2
Maryland	25	Virginia	10
Massachusetts	14	Washington	3
Michigan	11	West Virginia	2
Minnesota	3	Wisconsin	8
Mississippi	2	Wyoming	2

Foreign Countries

Belgium	2	Israel	1
Canada	4	Japan	4
Columbia	1	Korea	2
Denmark	2	New Guinea	1
France	2	Panama	1
Germany	1	People's Republic of China	12
Greece	1	Taiwan	4
Holland	1	Venezuela	1

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1988-89

Medical Center



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Duke University
1988-89

Medical Center

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The information in the bulletin applies to the academic year 1988-89 and is accurate and current, to the best of our knowledge, as of February, 1988. The University reserves the right to change programs of study, academic requirements, lecturers, teaching staffs, the announced University calendar, and other matters described in the bulletin without prior notice, in accordance with established procedures.

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School of Medicine Calendar 1988-89

First Year (Freshmen) Students

1988

August	
8	Monday, 8:30 A.M.—Orientation
15	Monday, 8:00 A.M.— First day of academic year, 1988-89, begin fall term
September	
5	Monday—Labor Day holiday
November	
22	Tuesday, 12:00 noon—Begin Thanksgiving holiday
28	Monday, 8:00 A.M.— Classes resume
December	
16	Friday, 6:00 P.M.—End fall term

1989

January	
9	Monday, 8:00 A.M.—Begin spring term
March	
10	Friday, 6:00 P.M.—Begin spring vacation
20	Monday, 8:00 A.M.— Classes resume
June	
23	Friday, 12:00 noon—End spring term

Second Year (Sophomore) Students

Introduction to Physical Diagnosis 1988

July	
11	Monday, 8:00 A.M.—Begin classes
August	
27	Saturday, 12:00 noon—End classes

Fall Term 1988

August	
29	Monday—Begin classes in sections 41 and 81
September	
5	Monday—Labor Day holiday
21	Wednesday, 6:00 P.M.—End classes in section 41
26	Monday, 8:00 A.M.— Begin classes in section 42
October	
19	Wednesday, 6:00 P.M.—End classes in sections 42 and 81
24	Monday, 8:00 A.M.—Begin classes in sections 43 and 82
November	
16	Wednesday, 6:00 P.M.—End classes in section 43
21	Monday, 8:00 A.M.— Begin classes in section 44
23	Wednesday, 6:00 P.M.—Begin Thanksgiving holiday
28	Monday, 8:00 A.M.—Classes resume
December	
14	Wednesday, 6:00 P.M.—End classes in sections 44 and 82

Spring Term 1989

January	
9	Monday, 8:00 A.M.—Begin classes in sections 41 and 81
February	
1	Wednesday, 6:00 P.M.—End classes in section 41
6	Monday 8:00 A.M.—Begin classes in section 42

March	
1	Wednesday, 6:00 P.M.—End classes in sections 42 and 81
6	Monday, 8:00 A.M.—Begin classes in sections 43 and 82
29	Wednesday, 6:00 P.M.—End classes in section 43
April	
3	Monday, 8:00 A.M.—Begin classes in section 44
26	Wednesday, 6:00 P.M.—End classes in sections 44 and 82. Begin spring vacation

Summer Term 1989

May	
8	Monday 8:00 A.M.—Begin classes in sections 41 and 81
31	Wednesday, 6:00 P.M.—End classes in section 41
June	
5	Monday, 8:00 A.M.—Begin classes in section 42
28	Wednesday, 6:00 P.M.—End classes in sections 42 and 81
July	
3	Monday, 8:00 A.M.—Begin classes in sections 43 and 82
4	Tuesday—Independence Day holiday
26	Wednesday, 6:00 P.M.—End classes in section 43
31	Monday, 8:00 A.M.—Begin classes in section 44
August	
23	Wednesday, 6:00 P.M.—End classes in sections 44 and 82

Third Year (Junior) and Fourth Year (Senior) Students

Summer Term 1988

May	
9	Monday, 8:00 A.M.—Begin classes in sections 16, 81, 41
June	
4	Saturday, 12:00 noon—End classes in section 41
6	Monday, 8:00 A.M.—Begin classes in section 42
July	
2	Saturday, 12:00 noon—End classes in sections 81, 42
4	Monday—Independence Day holiday
5	Tuesday, 8:00 A.M.—Begin classes in sections 82, 43
30	Saturday, 12:00 noon—End classes in section 43
August	
1	Monday, 8:00 A.M.—Begin classes in section 44
27	Saturday, 12:00 noon—End classes in sections 16, 82, 44

Fall Term 1988

August	
29	Monday, 8:00 A.M.—Begin classes in sections 16, 81, 41
September	
5	Monday—Labor Day holiday
24	Saturday, 12:00 noon—End classes in section 41
26	Monday, 8:00 A.M.—Begin classes in section 42
October	
22	Saturday, 12:00 noon—End classes in sections 81, 42
24	Monday, 8:00 A.M.—Begin classes in sections 82, 43
November	
1-2	Tuesday-Wednesday—Registration for spring term 1989
19	Saturday, 12:00 noon—End classes in section 43
21	Monday, 8:00 A.M.—Begin classes in section 44
23	Wednesday, 6:00 P.M.—Begin Thanksgiving holiday
28	Monday, 8:00 A.M.—Classes resume
December	
17	Saturday, 12:00 noon—End classes in sections 16, 82, 44

Spring Term 1989

January	
16	Monday, 8:00 A.M.—Begin classes in sections 16, 81, 41
February	
11	Saturday, 12:00 noon—End classes in section 41
13	Monday, 8:00 A.M.—Begin classes in section 42
March	
11	Saturday, 12:00 noon—End classes in sections 81, 42. Begin spring vacation
20	Monday, 8:00 A.M.—Classes resume. Begin classes in sections 82, 43
21-22	Tuesday-Wednesday—Registration for summer term 1989
April	
15	Saturday, 12:00 noon—End classes in section 43
17	Monday, 8:00 A.M.—Begin classes in section 44
18-19	Tuesday-Wednesday—Registration for fall term 1989
May	
13	Saturday, 12:00 noon—End classes in sections 16, 82, 44
13-14	Saturday-Sunday—Graduation activities

Summer Term 1989

May	
15	Monday, 8:00 A.M.—Begin classes in sections 16, 81, 41
June	
10	Saturday, 12:00 noon—End classes in section 41
12	Monday, 8:00 A.M.—Begin classes in section 42
July	
4	Tuesday—Independence Day holiday
8	Saturday, 12:00 noon—End classes in sections 81, 42
10	Monday, 8:00 A.M.—Begin classes in sections 82, 43
August	
5	Saturday, 12:00 noon—End classes in section 43
5	Monday, 8:00 A.M.—Begin classes in Section 44
September	
2	Saturday, 12:00 noon—End classes in sections 16, 82, 44



University Administration

General Administration

H. Keith H. Brodie, M.D., LL.D., *President*
Phillip A. Griffiths, Ph.D., *Provost*
Eugene J. McDonald, LL.M., *Executive Vice-President*
William G. Anlyan, M.D., D.Sc., *Chancellor (effective July 1, 1988)*
Eugene J. McDonald, LL.M., *Senior Vice-President for Administration, and University Counsel*
Joel L. Fleishman, LL.M., *Vice-President*
J. Peyton Fuller, A.B., *Vice-President, Planning and Treasurer*
William J. Griffith, A.B., *Vice-President for Student Affairs*
John J. Piva, Jr., B.A., *Vice-President for Alumni Affairs and Development*
Patricia C. Skarulis, M.A., *Vice-President for Information Systems*
Andrew G. Wallace, M.D., *Vice-President for Health Affairs*
John F. Adcock, M.B.A., *Corporate Controller*
N. Allison Haltom, A.B., *Secretary of the University*

Medical Center Administration

Office of Chancellor for Health Affairs

William G. Anlyan, M.D., D.Sc., *Executive Vice-President and Chancellor for Health Affairs (through June 30, 1988)*
Andrew G. Wallace, M.D., *Vice-President for Health Affairs*
Doyle G. Graham, M.D., Ph.D., *Dean, Medical Education*
Robert G. Winfree, M.A., *Associate Vice-President for Health Affairs*
Jane G. Elchlepp, M.D., Ph.D., *Assistant to the Chancellor for Health Affairs*
James L. Bennett, Jr., A.B., *Director of Administration*
Bernard McGinty, B.A., *Director of Budget and Finance*
Raymond C. Waters, M.A., *Assistant Vice-President for Health Affairs, Development, and Alumni*
Larry D. Nelson, B.S., *Assistant Vice-President for Health Affairs, Planning and University Architect*
J. Kevin Moore, J.D., M.H.A., *Director of Management Services*
L. T. Matthews, B.A., *Director of Engineering and Operations*

Office of Medical and Allied Health Education

Doyle G. Graham, M.D., Ph.D., *Dean, Medical Education*
Katharine Munning, Ph.D., *Associate University Registrar and Associate Dean, Medical Education*
Lois A. Pounds, M.D., *Associate Dean, Admissions*
Saul M. Schanberg, M.D., Ph.D., *Associate Dean, Curriculum*
Deborah C. German, M.D., *Associate Dean, Medical Education*
Daniel T. Gianturco, M.D., *Associate Dean, Medical Education*
Thomas R. Kinney, M.D., *Associate Dean, Medical Education*
Deborah W. Kredich, M.D., *Associate Dean, Medical Education*
Andrew C. Puckett, Jr., Ph.D. *Associate Dean, Medical Education*
Roy T. Parker, M.D., *Director, Continuing Medical Education*
G. Ralph Corey, M.D., *Director, Graduate Medical Education*

Office of Duke University Hospitals

Andrew G. Wallace, M.D., *Vice-President for Health Affairs*
William J. Donelan, M.S.M., *Director and Chief Operating Officer*
Duncan Yaggy, Ph.D., *Director and Chief Planning Officer*
John Robinette, M.H.A., *Director, Patient Services Division*
Robert F. O'Connell, B.S., *Director, General Services Division*
Rachel Z. Booth, Ph.D., *Assistant Vice-President and Dean of Nursing*
Roger Akers, B.S., *Controller, Duke Hospital*
Delford L. Stickel, M.D.S., *Associate Director, Medical Affairs*
Ralph Corey, M.D., *Associate Director, Graduate Medical Training*
Catherine G. Neyland, M.H.A., *Executive Assistant to the Vice-President for Health Affairs*

Office of the School of Nursing

Dorothy J. Brundage, Ph.D., R.N. *Interim Dean of Nursing*
Linda Fann, *Executive Assistant*

Standing Committees of the School of Medicine and Medical Center

Admissions Medical School

Lois A. Pounds, M.D., *Chairman*; Drs. Akwari, N. C. Anderson, W. B. Anderson, Frey, German, Hage, Kamin, Kenan, Kuhn, Lumb, Lyles, Mitchell, Murray, Oldham, Phillips, Polisson, Rajagopalan, Rourk, Sanfilippo, Shields, Squire, D. Sullivan, R. Sullivan, Jr., Ward, and Widmann; *Administrative Assistant*: Ms. Franklin; *Student Representatives*: Ms. Trachman; Messrs. McGinnis and Myers

Animal Care and Use

F. Stephen Vogel, M.D., *Chairman*; Drs. Abou-Donia, Bissette, Corley, Heath, Kaufman, W. Murray, Proia, Schold, Steenburger, Tyrey, Walther, and Weiss; Messrs. K. Moore and Rodio

Audit and Tissue

Clinical Chairman of each clinical service and head of each division in service

Brain Death

Allen D. Roses, M.D., *Chairman*; Neurology—Drs. Alberts, Albright, Bowman, Bragdon, Clark, Davis, D'Souza, Erwin, Goldstein, Heyman, Hurwitz, Kandt, Lewis, McNamara, E. W. Massey, J. Massey, Payne, Radtke, Rozear, Sanders, Schmechel, Schold, Shin, Siddique, Tourian; Neurosurgery—Drs. Cook, Friedman, Kramer, Nashold, Oakes and Wilkins

Clinical Cancer Education Program

John M. Faletta, M.D., *Chairman and Director*; Drs. Bast and Halperin

Clinical Investigations

Jerome Harris, M.D., *Chairman*; Joseph C. Farmer, Jr., M.D., *Vice-Chairman*; Barbara Echols, *Cochairperson*; Drs. Back, Borowitz, Carroll, Cobb, Dutton, Jones, Kay, Lakin, McIntyre, Rhoads, Semans; Chaplain Travis; Ms. Lipscomb, McIntire, Meador, Perry, Stewart, Wilkins; *Alternates*: Drs. Falletta, Foulks, Fox, Ideker, Killam, Killenberg, Mahorney, Myers, Schold, Sostman; Chaplain Franzen; Ms. Long, Mr. Lee; *Student Representatives*: Messrs. Herlong and Simons

Continuing Medical Education

Roy T. Parker, M.D., *Chairman*; Cynthia C. Easterling, *Coordinator*; Drs. Bennett, Cooper, Gallis, Hall, Kandt, Kenan, Munning, and Shields

Curriculum

Steering Committee: Saul M. Schanberg, M.D., Ph.D., *Chairman*; Thomas R. Kinney, M.D., and Katharine Munning, Ph.D., *Co-chairmen*; Drs. Akwari, Grossman, and Pizzo; Mr. Didriksen, Ms. Nash; *Student Representatives*: Mr. Evans, Ms. Hoock

Long-Range Planning: Salvatore Pizzo, M.D., Ph.D., *Chairman*; Drs. Cartmill, H. Cohen, Dawson, Effman, Ellinwood, Filston, Gallis, Hage, Handwerger, Michener, Padilla, G. Phillips, Siegel, Waugh, R. Willett, and Yaggy; *Student Representatives*: Mr. Evans, Ms. Hoock

Current Policy: George M. Padilla, Ph.D., *Chairman*; Drs. Bearman, Burger, Cresswell, J. Davis, Hatchell, Hine, Kootsey, MacPhee, Ottolenghi, Squire, Steege, Vogel, Wagner, W. Wilkinson, H. Willett; *Student Representatives*: Messrs. Oetting and Simons

Dean's Committee on Minority Affairs

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Duke Comprehensive Cancer Center Clinical Cancer Committee

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Financial Aid

Ms. Nell Andrews, *Administrator*; Drs. Johnston, Pounds and Graham; Ms. Franklin; Mr. McGinty; Two student representatives

Hospital Advisory

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Hospital Infections

Suydam Osterhout, M.D., Ph.D., *Chairman*; Drs. Akwari, Hamilton, Hunt, Jackson, Klein, Livengood, Perfect, Rudd, Thomann, and Wilfert; Ms. Avery, Burgess, Palmer, Robbins, and Weddle; Messrs. McAllister and Richards

Library

Mr. Warren Bird, *Chairman*; Dr. Graham; Messrs. Winfree and McGinty

Medical Center Radiation Control and Radioactive Drug Research Committee

Henry Kamin, Ph.D., *Chairman*; Drs. Briner, Grant, Harris, Matthews, O'Foghludha, Sullivan, and Wolbarsht and Mr. Knight

Medical Center Safety

Wayne R. Thomann, Ph.D. *Chairman*; Drs. Bradford, Burdette, Jackson, Kamin, Keene, Suydam Osterhout; Messrs. Blake, Bowman, Hilliard, Knight, Leathers, J. Moore, Rodio, Stinson; Ms. Brady and Burgess

Medical Records

George J. Ellis III, M.D., *Chairman*; Drs. Gerber, Piscitelli, Stickel and Wang; Ms. Hale, Mears, Woodlief, Worsley, and Yarberry; Messrs. Eubanks, Hunt, Kulik, Moore and Stinson

Medical Center Policy Advisory Committee

William G. Anlyan, M.D., *Chairman*; Drs. Carroll, Graham, Greenfield, Hammond, Hill, Jennings, T. Johnson, Joklik, Katz, Kirshner, Machemer, Parkerson, Ravin, Robertson, Sabiston, Wallace, and Watkins; Mr. Bennett

Medical Student Research Scholarship

Galen S. Wagner, M.D., *Chairman*; Drs. Anderson, Bastia, Granger, Kaufman, Kredich, Lieberman, Lowe, Mills, Pizzo, Reedy and Strauss

Merit Scholarship

Doyle G. Graham, M.D., Ph.D., *Chairman*; Drs. Bollinger, N. Kredich, G. Phillips, Pounds, Slotkin and Joanne Wilson; *Student Representatives*: Ms. Foster, Mr. Hall; *Administrative Assistant*: Ms. Franklin

North Carolina Residence

Lois A. Pounds, M.D., *Chairman*; Drs. Clapp, Munning, and Peete

Operating Room Advisory

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Pharmacy and Therapeutics

Philip D. Lumb, M.D., *Chairman*; Drs. Blum, Cobo, Gianturco, Killam, Kurtzberg, Leight, Perfect, Rudd, and Willett; Ms. Miller; Messrs. Dedrick, McAllister and Robinette; Chief Resident in the Department of Medicine

Research Award

F. Stephen Vogel, M.D., *Chairman*; Drs. Fridovich, Metzgar, Pizzo, Schanberg, Semans, Snyderman, and Spach

Study Away Committee

Deborah W. Kredich, M.D., *Chairman*; Drs. Hatchell, Garrett, McCarty, Pounds, and Wilfert

Traffic and Parking

Ralph Hawkins, *Chairman*; Dr. T. Anderson, Ms. Campbell, Fann, Fendt, Friedlein, Heng and Roberts; Messrs. Bennett, Crenshaw, Gentry, and Robinette

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Veterans Administration Research and Development

Wilkie A. Wilson, Jr., Ph.D., *Chairman*; Drs. Creech, Crain, Duncan, Feussner, Hamilton, Kudler, Newcomb, Pisetsky, Shelburne, Shipley, Yarger, and Young

Chancellor's Veterans Administration

William G. Anlyan, M.D., *Chairman*; William D. Bradford, M.D., *Vice-Chairman*; Drs. Busse, Carroll, Cavenar, Cohen, Feussner, Grant, Graham, Greenfield, Jennings, Lumb, Newcomb, Ravin, Rotman, Sabiston, Scott, Shelburne, Thompson, Wallace, Watkins, and Yarger; Mr. Carr; Ms. Baumgarten and Dr. Booth

Women's Group Committee

Catherine Wilfert, M.D., *Chairman*; Drs. Allen, Bender, Bigner, Burdette, Coleman, German, Rosse, K. Smith, Steege, Studenski, and Willett

General Information



History

I have selected Duke University as one of the principal objects of this trust because I recognize that education, when conducted along sane and practical, as opposed to dogmatic and theoretical, lines is, next to religion, the greatest civilizing influence.

I have selected hospitals as another of the principal objects of this trust because I recognize that they have become indispensable institutions, not only by way of ministering to the comfort of the sick, but in increasing the efficiency of mankind and prolonging human life.

James Buchanan Duke, Indenture of The Duke Endowment, 1924

By establishing the Duke Endowment, James Buchanan Duke expressed his hope that adequate and convenient hospital care would become available to all Americans. His further bequests provided for the opening, in 1930, of the School of Medicine, School of Nursing, and hospital which today are the core institutions of the Duke University Medical Center. By opening the first major outpatient clinics in the region in 1930, Duke recognized its responsibility for providing quality care to the people of the Carolinas. The Private Diagnostic Clinic, organized in 1932, not only provided coordinated medical and surgical care to private patients with moderate incomes but also allowed members of the medical faculty to contribute a portion of their earnings toward the continued excellence of medicine at Duke. In less than five years Duke was ranked among the top 25 percent of medical schools in the country by the Association of American Medical Colleges.

Building on this heritage, the Duke University Medical Center ranks among the outstanding health care centers of the world. Its pioneering medical curriculum, instituted in 1966, features a generous measure of elective course selection in the belief that all health professionals must be prepared for a lifetime of self-education. The scientific grounding for that education is provided through participation in a wide variety of ongoing research programs. The opening of Duke Hospital North in 1980 makes the Duke Hospital, with 1,008 beds, one of the most modern patient care facilities anywhere available. The combined strength of its teaching, research, and hospital care programs represents the continuing fulfillment of the dream of James Buchanan Duke.

Over the years the Medical Center has been enlarged and its programs expanded by new construction and by the acquisition of, and affiliation with, established hospitals.

Currently the Medical Center at Duke University occupies approximately 140 acres on the West Campus. The southern quadrant is contiguous with the main quadrangle of the University and consists of the following: *Davison Building*—Department of Pathology, Central Teaching Facility, Division of Audiovisual Education, Medical Center Administration, Student Lounge, School of Medicine, Office of Admissions, and

departmental research laboratories and offices. *Duke Hospital South*—inpatient care units, in- and outpatient diagnostic, treatment and support services including operating rooms, recovery room and laboratories, positron emission tomography imaging, nursing service administration, amphitheater, chapel, private diagnostic clinics, outpatient clinics, student infirmary, departmental offices; *Baker House*—Departments of Medicine, Anesthesiology, Obstetrics and Gynecology, outpatient diagnostic, treatment and support services including speech and hearing, pastoral care and counseling, and dentistry/oral surgery; *Barnes Woodhall Building*—inpatient care units, in- and outpatient diagnostic, treatment and support services including labor and delivery room and radiology, hospital administration, Department of Radiology, departmental offices; *Diagnostic and Treatment Building*—clinics, in- and outpatient diagnostic, treatment and support services, departmental research laboratories and offices; *Ewald W. Busse Building*—Center for the Study of Aging and Human Development, treatment and support services, departmental research laboratories and offices; *Eugene A. Stead Building (CR-1)*—inpatient care unit (research), departmental research laboratories and offices; *Clinical Research II*—hyperbaric medicine unit, departmental research laboratories and offices, clinical cancer research unit and the Department of Psychiatry; *Edwin A. Morris Clinical Cancer Research Building*—Inpatient care unit (research), clinics, diagnostic treatment and support services including Division of Radiation Oncology, departmental research laboratories and offices.

The northern quadrant has the following buildings: *Nanaline H. Duke Medical Sciences Building*—Departments of Biochemistry, Physiology, and Pharmacology; *Alex H. Sands Medical Sciences Building*—Department of Anatomy and basic science research programs of the Departments of Medicine, Surgery, Psychiatry, and Anesthesiology; *Edwin L. Jones Basic Cancer Research Building*—Director of Comprehensive Cancer Center, Department of Microbiology and Immunology and basic science research programs of Medicine, Surgery, Pediatrics, Obstetrics-Gynecology, Anatomy, and Pathology; *Clinical and Research Laboratory Building*—Howard Hughes Medical Institute, Molecular Genetics, Hospital Clinical Laboratories, Departments of Medicine, Pharmacology and Psychiatry; *Bell Building*—offices and laboratories of Medicine, Surgery, Pediatrics, Radiology, Anatomy, and Ophthalmology. It also houses Information Services, the gross anatomy laboratories, Medical Center design office, engineering and operations, and grants and contracts; *Seeley G. Mudd Communications Center and Library*—Medical Center Library, the Trent Collection of the History of Medicine, the Office of Public Relations, and the Searle Center for Continuing Education; *Joseph A. C. Wadsworth Building (Eye Center)*—inpatient care units, eye clinic, diagnostic, treatment and support services including operating rooms, recovery, Department of Ophthalmology, departmental research laboratories and offices; *Duke Hospital North Division and Anlyan Tower* inpatient care units, diagnostic, treatment, and support services including operating rooms and recovery, radiology, magnetic resonance imaging (MRI), laboratories, Departments of Medicine, Surgery, Pediatrics, and Anesthesiology departmental offices.

In the western quadrant of the campus are: *Environmental Safety Building, Research Park Buildings I, II, III, and IV*—offices and laboratories of Medicine, Surgery, Pediatrics, Radiology, Microbiology and Immunology; *Vivarium*—Division of Laboratory Animal Resources and laboratory animal care facilities; *Animal and Laboratory Isolation Facility*—special containment facility for cancer research.

In the eastern quadrant of the campus are: *Pickens Rehabilitation Center*—general and rehabilitation outpatient clinics; Student Health Service, Employee Health Service, and Faculty Family Health Service; *Civitan Mental Retardation and Child Development Center*—offices, clinics, and laboratories of Psychiatry and Pediatrics; *Trent Drive Hall*—Health Administration and Department of Community and Family Medicine.

The goal of the Duke University Medical Center is to be a leader in contemporary medicine. This involves maintaining superiority in its four primary functions unexcelled

patient care, dedication to educational programs, national and international distinction in the quality of research, and service to the region.

Growth is identified with deeper involvement in the social aspects of health, the establishment of advanced therapeutic and research facilities, and a medical teaching program that has attracted the attention of educators around the world.

Resources for Study

Library/Communications Center. The Medical Center Library/Communications Center is located in the Seeley G. Mudd Building, midway between the north and south Medical Center campuses.

The Medical Center Library attempts to provide all informational services and collections necessary to further educational, research, and clinical activities in the medical field. The collection of approximately 225,000 volumes and 2,650 current journal subscriptions is freely available for use by Medical Center students and personnel; study accommodations for 500 readers includes extensive provisions for audiovisual learning. The library also includes the Trent Collection which is unsurpassed in the southeast as a resource for study of the history of medicine, and a branch collection of books and journals maintained in the Nanaline B. Duke Medical Sciences Building.

The Medical Center Library is open: Monday-Friday, 8:30 A.M.-midnight; Saturday, 8:30 A.M.-6:00 P.M.; Sunday, 12:00 noon-midnight. Summer and holiday hours are as announced.

Director: Warren P. Bird, M.S. (Columbia, 1964), *Associate Professor of Medical Literature*; Associate Director: Mary Ann Brown, M.A. (Peabody, 1960), *Librarian*; Curator of the Trent Collection: G.S.T. Cavanagh, B.S., B.L.S. (McGill, 1951), *Professor of Medical Literature*.

The Medical Center Bookstore offers a wide selection of biomedical textbooks and reference books, as well as an assortment of laboratory and clinical instruments and office supplies. Facilities for browsing in a pleasant atmosphere are available, as are special individualized services. The Bookstore is open: 8:30 A.M.-5:00 P.M., Monday-Friday.

Manager: Jim Savage

The Searle Center for Continuing Education in the Health Sciences provides accommodations for conferences, symposia, lectures and meetings to support the Continuing Education activities of the Medical Center. Provisions have been made for banquet and food service arrangements to complement the meeting facilities.

Director: Ellen Luken

The Thomas D. Kinney Central Teaching Laboratory. The Thomas D. Kinney Central Teaching Laboratory, formerly the Central Teaching Facility, is located on the fourth floor of Davison Building where it provides laboratory, demonstration, and conference space for all courses taught in the basic sciences, with the exception of gross anatomy. A full-time staff maintains a wide range of equipment and provides supplies and services necessary for the teaching programs conducted in the facility, thus enabling the academic staff of each department to devote its efforts entirely toward the students.

Six unit laboratories, each accommodating twenty students, and a twelve-person M.D.-Ph.D. candidate laboratory are devoted to instruction for the first year. All first year medical students are given space in one of these laboratories for their own work which they maintain for the entire academic year. Three small laboratories are interspersed between the six unit laboratories and provide space for large pieces of equipment used in conjunction with exercises conducted in the unit laboratories. A computer cluster with word-processing software and patient simulations is also available to students. Three large multipurpose laboratories can accommodate forty or more students each for a large variety of teaching exercises. Other areas include demonstration and conference rooms and a microscopy laboratory for advanced courses offered during the third year.

The Central Teaching Laboratory also provides resources for allied health programs, a microscope cleaning service, and exam grading for multiple-choice questions. Five large

conference rooms in Duke South and twelve conference rooms in Duke North are scheduled through this office, providing additional teaching space for groups of 16 to 225 persons when necessary.

Manager: Carol G. Reilly, B.S.

Division of Audiovisual Education. The Division of Audiovisual Education serves the Medical Center by providing all types of audiovisual support materials to assist the faculty. There are three sections: Medical Art, Medical Photography, and Central Television.

The Medical Art Section provides illustrations produced by various art methods and techniques. Services rendered are surgical and anatomic drawings, schematic and mechanical drawings, diagrams, charts, graphs, designs, lettering, calligraphy, signs, and poster exhibits, as well as other forms of illustrations. Computer generated graphics is the newest service from the art section.

The Medical Photography Facility is staffed and equipped to provide a full range of photographic services for patient care, teaching, and research. Patient photography activity includes black and white and color photos in the studio, on the ward, in the clinic, or in the operating room. Copy photography includes a full range of slide services for internal and external lecture and presentation purposes. Black and white and color prints for publication, display and poster session purposes are also available. Other services include daily processing of Ektachrome film, location photography, and passport and application prints.

Central Television also supports teaching, research, and patient-care programs of the Medical Center. The three-fourths inch U-matic and one-half inch VHS video formats are used for color recording of patient education programs, lecture presentations, and surgical procedures as part of staff professional education. Motion pictures in color and with sound are also produced. Audiotape services, projectionists, and projectors are available.

Director: Thomas P. Hurtgen, M.B.A.

Duke Hospital. Duke Hospital, one of the largest private hospitals in the south, is part of the Medical Center and currently has 1,008 beds. The hospital directs its efforts toward the three goals of expert patient care, professional education, and service to the community. It offers patients modern comprehensive diagnostic and treatment facilities and special acute care and intensive nursing units for seriously ill patients. More than 33,000 patients are admitted annually. Surgical facilities include thirty-two operating rooms in which surgeons perform more than 21,000 operative procedures annually. Approximately 2,000 babies are born each year in the delivery suite. Other special facilities for patients include a heart catheterization laboratory, hemodialysis unit, cancer research unit, pulmonary care unit, hyperbaric oxygenation chamber, and cardiac care unit.

Close working relationships with private and governmental health and welfare agencies provide opportunities for continued care of patients after they leave Duke Hospital.

Ambulatory services include the nonprivate outpatient clinics, private diagnostic clinics, the employee health service, and the emergency department, with annual total patient visits of over 400,000. The clinical faculty of the Duke University School of Medicine participate in undergraduate and graduate medical education and practice medicine in the hospital and in private diagnostic clinics.

Duke Hospital, with a house staff of approximately 750, is approved for internship and residency training by the Council on Medical Education and Hospitals of the American Medical Association and is fully accredited by the Joint Commission on Accreditation of Hospitals.

Veterans Administration Medical Center. The Durham Veterans Administration Medical Center, with 435 beds, annually admits over 7,000 patients. The hospital is within walking distance from the School of Medicine and has closely integrated teaching and

training programs for medical students and house staff. These programs are provided by the full-time professional staff who are members of the faculty of Duke University School of Medicine.

Sea Level Hospital. Sea Level Hospital in Carteret County, North Carolina, became part of Duke University Medical Center in 1969 as a result of a gift by D. E. Taylor and family of West Palm Beach, Florida. The seventy-two-bed community hospital retains its professional and administrative staff, with representatives of the Medical Center serving in an advisory capacity. It provides an opportunity for medical students to obtain experience in the practice of medicine in a small community.

Lenox Baker Children's Hospital. On November 1, 1987 the Lenox Baker Children's Hospital became a part of Duke University Medical Center, entering a new phase in its development as an orthopaedic and rehabilitation center for the children of North Carolina. A full spectrum of orthopaedic and rehabilitation services is offered to identify and meet realistic goals; and to educate, support, and assist families, schools, and communities in providing a rich environment for disabled children.

Durham County General Hospital. Durham County General Hospital is a county owned, 476-bed, general, short-term care community facility serving the residents of Durham County. This institution participates in many of the medical and health-related professional training experiences.

Other Hospitals. Various cooperative teaching and training programs are available for medical and allied health professional students and house staff at other hospitals including McPherson Hospital in Durham, Asheville Veterans Administration Medical Center in Buncombe County, Murdoch Center for Retarded Children and John Umstead Hospital in Butner, Dorothea Dix Hospital in Raleigh, and Cabarrus Memorial Hospital in Concord, North Carolina.

Program Information



The Medical Curriculum

In recent years, analysis and appraisal of medical curricula have resulted in changes in many medical schools. Several factors have required these changes. Important among them are the increasing scope and complexity of medicine generally and the dissatisfaction with the sharp cleavage between basic science and clinical years. As a result of long study, the Duke University School of Medicine instituted a major revision of the curriculum, beginning with the class which entered in the fall of 1966.

The aims of the present curriculum are: (1) to provide a strong academic basis for a lifetime of growth within the profession of medicine, with the development of technical competence, proficiency, and the proper attitudes peculiar to the practice of medicine as well as an appreciation of the broader social and service responsibilities; (2) to establish for the first year a basic science program which will fulfill the purposes of the increasingly heterogeneous student body; (3) to offer both clinical and basic science education simultaneously; (4) to permit the student to explore personal intellectual preferences and capabilities; (5) to allow indepth study in selected areas, either clinical or basic science; (6) to provide greater freedom of course selection and thus to encourage earlier career decision; and (7) to achieve better integration of the medical school curriculum with residency training and the practice of medicine.

The curriculum, while offering a previously unattainable degree of flexibility to medical education and new opportunities for intellectual exploration, also makes heavy demands upon the student. It should be recognized that medical students at the Duke University School of Medicine are expected to maintain a consistent level of performance and to demonstrate qualities of initiative and dedication to their chosen profession. A scholarly attitude toward medicine that will continue throughout an entire career is an important objective of the Medical School. The foundations of this attitude to learning should accompany the student upon entering.

Students are expected to maintain at all times a professional attitude toward patients, to respect confidences, and to recognize that they are the recipients of privileged information only to be discussed within the context of scholarship and in circumstances that truly contribute to the educational process or to the care of the patient. This attitude involves consideration not only of speech and personal appearance but *also of morality, honor, and integrity.*

This attitude also involves a focus on medical ethics and human values. Beginning in the fall of 1987 with the first year class, the School of Medicine made this focus an intentional part of the curriculum. The full development of this will include each of the classes in the four-year medical school curriculum. Major advances in medical technology and sciences have made excellence in medical education a necessity. These advances also necessitate the preparation of physicians for dealing with new complexities of medical practice. And these advances and complexities also make it of paramount importance that medical education enable each student to grow in both depth and breadth as a human being. The Duke University School of Medicine is rising to this challenge.

Doctor of Medicine Degree

The degree of Doctor of Medicine is awarded, upon approval by the faculty of Duke University, to those students who have: (1) satisfactorily completed the academic curriculum; (2) demonstrated the intellectual, personal, and technical skills to function as a competent physician; (3) demonstrated their fitness to practice medicine by adherence to a high standard of ethical and moral behavior.

The faculty of Duke University School of Medicine have developed general guidelines for technical standards for medical school admissions and degree completion. These are based on the report published by an AAMC Special Advisory Panel in January 1979, and are available on request from the school.

The awarding of degrees is contingent upon payment of, or satisfactory arrangements to pay, all indebtedness to the University.

Course Requirements—First Year. The student will study the principles of all the basic science disciplines. Rather than mastering an encyclopedic array of facts, the purpose will be to acquire familiarity with the major principles of each subject. The year will consist of instruction in the following:

Semester 1	Credit
Gross Anatomy	3
Microanatomy	3
Biochemistry	5
Medical Physiology	4
Genetics	1
Neurobiology	4
	<hr/> 20
Semester 2	Credit
Pathology	5
Microbiology	5
Pharmacology	4
Human Behavior	2
Immunology	1
	<hr/> 17

Following the first year, there is a mandatory vacation before beginning the Introduction to Clinical Diagnosis course during the third week of July. Every class has Labor Day, Thanksgiving, Christmas, and spring break with the exact dates depending upon rotation and class schedules.

Course Requirements—Second Year. Satisfactory completion of the first year curriculum is a prerequisite to the second year curriculum. The second year will provide an exposure to clinical science disciplines, which permits students early in their careers to become participants in the care of patients. The acquired appreciation of the problems of the clinical areas and the opportunities to recognize the applications of the basic sciences should lead to a more meaningful selection of courses for the subsequent two years.



The Introduction to Clinical Diagnosis course, which occupies the seven weeks preceding the core clinical rotations, is followed by eight-week rotations in internal medicine, surgery, obstetrics/gynecology, pediatrics, and psychiatry, and either an eight-week rotation in family medicine or a four-week rotation in family medicine and a four-week rotation in neurology.

Course Requirements—Third and Fourth Years. Satisfactory completion of the second year curriculum is a prerequisite to the elective curriculum. The third and fourth years of undergraduate medical education are elective and build upon the experiences in basic science and clinical medicine of the first two years. One half of this experience must be in basic science and one half in clinical medicine. The purpose of the basic science experience is to provide each student an opportunity to focus in an area or areas of interest and pursue, in depth, a scholarly activity. Time may also be spent gaining strength in areas of basic science weakness.

Each student determines a home base study program for the basic science elective experience. With the aid of advisors, the individual basic science elective program is devised to include an area of scholarly work to pursue in depth a program which may or may not be an independent biomedical research project. Any combination of: (a) research preceptorship, (b) tutorials, or (c) courses inside or outside the home base study program may comprise the overall basic science elective experience.

The clinical elective experience should be used to: (1) aid in decision making about the area of choice of postgraduate training, (2) obtain experiences in areas that would not be included in that postgraduate training, and (3) above all, pursue active experiences

in patient care sufficient to provide the basic skills necessary for the doctor/patient interaction. With rare exception, the basic science elective experience should be taken as a block.

Recipients of a Ph.D. degree in a basic science subject or completion of one of the special study programs may fulfill the requirements for basic science. Specific prerequisites for elective courses may be required.

The elective courses of study offered are described under each department. The wide selection affords an opportunity for students to design programs to best satisfy their needs, with guidance from their advisers. Thirty-six credits in each elective curriculum, i.e., basic science and clinical science, are required for graduation.

As an alternative after completion of the second year, the student may enroll as a Ph.D. candidate in one of the basic sciences, earning this degree in two or three years. Then, having completed three of the four years necessary for a Doctor of Medicine degree, the student may earn that degree by completing a fourth clinical year.

The third and fourth years will be divided into four terms of sixteen weeks each. Certain courses as noted will be offered during the summer term.

Promotion. Where appropriate, certification by the individual faculty person or by the delegated representative of each departmental Chairman that a student has satisfactorily completed requirements for a course shall constitute grounds for a grade of "passing" or a grade of "passing with honors." "Passing with honors" is reserved for those students who have performed in an extraordinary manner in the opinion of the faculty.

An "incomplete" grade shall be reserved for those students who have not met all of the requirements because of illness or other such extenuating circumstances. "Incompletes" that are not satisfied within one calendar year automatically become "failures". It is the departmental chairman's responsibility or that of the delegated representative of the departmental Chairman to certify that an "incomplete" has been satisfied and to so notify the Registrar. A "passing grade" shall be placed alongside an "incomplete" on the permanent and official transcript. All first year courses must be satisfactorily completed before a student may enroll in second year courses. All second year courses must be satisfactorily completed before a student may enroll in the elective curriculum.

A "fail" grade is recorded on the permanent record of a student by the Registrar upon certification by the individual faculty person or the delegated representative of the departmental chairman that unsatisfactory work has been done in the opinion of the faculty. Failures cannot be erased from the permanent record but the requirements of the course may be satisfied by repeating the course in a satisfactory manner at which time a passing grade is recorded on the official and permanent transcript.

Each student's record will be reviewed periodically by promotions committees composed of the departmental chairmen or their designees. There will be two such committees: one for basic science and one for clinical science. Recommendations by these committees will be made to the Dean of Medical Education who may follow one of several options:

1. Promote students whose work is satisfactory;
2. Warn students whose work is less than satisfactory that they must improve their scholastic endeavor;
3. Place on probation students whose work is unsatisfactory; or
4. Request the resignation of any student who is considered an unpromising candidate for the degree of Doctor of Medicine.

A student wishing to appeal a decision may do so to the Dean of Medical Education within two weeks of notification.

The Dean of Medical Education, with the advice of the Medical Center Policy Advisory Committee, reserves the right to require the withdrawal of any student at any time if, in his opinion, the student should not continue in the School of Medicine.

Satisfactory Progress. Satisfactory progress for students in the School of Medicine shall be construed as the successful completion of all requirements necessary for the advancement from one year to the next. These requirements are as follows:

First to Second Year. Completion of core basic science courses in one calendar year.

Second to Third Year. Completion of core clinical science courses within fourteen months.

Third to Fourth Year. Completion of 36 elective course credits within one calendar year.

Fourth Year to Graduation. Completion of an additional 36 elective credits within one calendar year.

Leave of Absence. With the approval of the Dean of Medical Education, a student may be granted an official leave of absence for two or more consecutive terms but not to exceed one calendar year. In the following circumstances a student must request a leave of absence: a freshman who will not be enrolled for the entire first year; a sophomore who will not be enrolled during an entire term and, thereby, not complete the core clinical science courses within fourteen months; and a third or fourth year student who will not be enrolled for consecutive terms in the fall, spring, and/or summer.

A student who does not enroll for a period longer than one year must seek readmission by application to the Medical School Admissions Committee.

Visiting Students. The School of Medicine provides opportunities for visiting students to enroll in elective courses for a maximum period of eight weeks. The School of Medicine does not offer long term or extensive clinical experience (sometimes called externships or clerkships) sufficient to satisfy the clinical educational requirements of foreign medical schools. For information write to: Coordinators, Visiting Students, Box 3005, Duke University Medical Center, Durham, North Carolina 27710.

Combined Degree Programs

Medical Scientist Training Program. The Medical Scientist Training Program is designed for highly qualified students strongly motivated toward a career in medical sciences and academic medicine. It provides an opportunity to integrate graduate education in one of the sciences basic to medicine with the full clinical curriculum of the School of Medicine. The program requires, on the average, six to seven years of study and leads to both the M.D. and Ph.D. degrees. Although the special emphasis of this program is on basic medical science, the trainees, because of their education in clinical medicine, have a remarkable range of career opportunities open to them. Graduates of this program follow one of two broad paths. Some embark directly on careers in teaching and research in one of the basic medical sciences, while maintaining strong ties with clinical science as a result of their combined training. Others enter residency programs before pursuing investigative and teaching careers in clinical medicine, carrying with them strong academic backgrounds which allow them to conduct fundamental research with a foundation of superior training and experience in basic sciences.

Eligibility. Applicants must meet the admission requirements of both the Medical School as a candidate for the M.D. degree, and the Graduate School as a candidate for the Ph.D. degree. Most candidates apply for admission to the first year of the program, but in special cases applications can be accepted from students who are in residence in the Medical School or Graduate School of Duke University. In addition to the minimum requirements for acceptance to the Medical School and the Graduate School, advanced course work in science and mathematics and prior research experience (or other evidence of research aptitude) will count heavily in the selection of candidates.

Financial Support. Students admitted to the first year of the program will receive a traineeship award, consisting of a stipend and full tuition allowance, provided by a National Research Service Award from the National Institutes of Health. Currently the annual stipend is \$8,552, and financial support from that award can be furnished for up

to six years, assuming normal progress. These six years need not be consecutive; this permits flexibility in funding in case more than six years are required for completion of the curriculum. Funding by the NIH is limited to citizens or permanent residents of the United States.

The Training Program. This program has been designed to offer trainees great latitude in the selection of course material. Basic requirements are two academic years composed of the first basic science year and the second clinical science year of the curriculum for medical students at Duke University. Following completion of the second year, the trainee enters the graduate program to complete the requirements for the Ph.D. degree. One more academic year of elective clinical study is necessary to complete the requirements for the M.D. degree. Both degrees are awarded at the completion of this sequence. Minor variations in this schedule can be arranged if this is advantageous to the student's education.

Year 1—Core Basic Science Year. This year consists of courses in anatomy, biochemistry, genetics, microbiology, pathology, pharmacology and physiology.

Year 2—Core Clinical Science Year. This year encompasses a comprehensive approach to medicine oriented to the patient as a whole. The year provides fundamental training in clinical medicine, with emphasis on the relationships between general biological processes, from conception through birth, development, and maturation to senescence and death, as well as individual clinical states. Special consideration is devoted to the pattern of developmental sequences and to the changes in that pattern determined by genetic composition and the particular environment in which the patient lives.

During the second year, the trainee is taught primarily by teacher-investigators from the clinical departments. The Introduction to Clinical Diagnosis course occupies the six weeks preceding the core clinical rotations. The balance of the second year consists of equal eight-week rotations. These rotations are offered in internal medicine, surgery, obstetrics/gynecology, pediatrics, psychiatry, and family medicine. Second year students are given the freedom to choose five of these six rotations. The sixth rotation may be taken without additional tuition if the student so chooses or it may be omitted entirely.

Years 3, 4, 5, (6)—The Graduate Years. During the third, fourth, and fifth and, if necessary, sixth year of the program, the trainee pursues graduate study to satisfy the requirements for the Ph.D. degree.

These requirements include: (1) completion of necessary course work, (2) adequate performance in the preliminary examination, (3) original research suitable for a dissertation, and (4) successful defense of the thesis in the final examination. Detailed description of the other general requirements for the Ph.D. degree are stated in the *Bulletin of the Graduate School*.

The graduate curriculum of each trainee is developed in consultation with the director of graduate studies of the department in which the trainee elects to study and requires the approval of the Medical Scientist Training Program Committee. Since most of the ordering ideas and experimental techniques of all the medical sciences derive from mathematics and the physical sciences, it is essential to ensure that all students in the program have an adequate foundation in these subjects. Because of the close working relationship and geographical proximity of the departments of medical and physical sciences at Duke the setting is unusually favorable for the achievement of that goal.

Descriptions of the graduate courses in the Departments of Anatomy, Pathology, Microbiology, Biochemistry, Genetics, Physiology, Pharmacology, Biomedical Engineering, and Computer Science are listed in the *Bulletin of the Graduate School*. Trainees are encouraged to select courses which relate to their developing individual interests rather than follow a prescribed curriculum applied to all students in a given discipline. Such range, flexibility, and freedom are the essence of graduate education. The original research and dissertation of each trainee is supervised by a faculty adviser chosen by the trainee in consultation with the Director of Graduate Studies in the appropriate department. The faculty adviser is the chairman of the trainee's supervisory committee, which

consists of at least three members from the major department. This committee generally administers the preliminary examination before the student commences original research and the final examination after the student completes the dissertation.

Final Year—An Elective Year in Clinical Science. In this year, which is entered only after completion of all requirements for the Ph.D. degree, a faculty adviser from the clinical discipline in which the student is most interested is assigned. The student and the adviser construct an individualized curriculum, which often places major emphasis on one clinical area and minor emphasis on other fields. One aim is the integration of research interests and clinical experience in such a way that the student's research competence will be facilitated; therefore, this year is planned with regard to the trainee's proposed career in research as well. This elective year provides further training in clinical medicine to complement the second or core clinical year, so that the trainee's total clinical experience is the same as that given in the regular clinical years of medical school (the third and fourth years in the majority of schools). It should be noted that since students in the program receive the M.D. degree upon completion of this final year, great care is taken by the faculty to ensure that students are competent and knowledgeable in current concepts of patient care. It is hoped that the final year will provide the student with an experience which is not repeated during the residency but will serve to complement later phases of training. Thus, future surgeons might be exposed to fields other than surgery, since they will receive intensive training in that discipline during their residency programs.

Application and Admission Procedure. The following guidelines should be observed by individuals applying to the Medical Scientist Training Program.

1. The application form for the Duke University School of Medicine should be completed and submitted as early as possible, since acceptance into the Medical Scientist Training Program requires acceptance by both the Program Committee and the Medical School Admissions Committee. Applicants who cannot be accepted into the program are still fully eligible for acceptance to the medical school if the Medical School Admissions Committee considers them qualified and desirable.
2. The application form for the Medical Scientist Training Program should be completed and submitted with the application to the School of Medicine. *To ensure full consideration by the Program Selection Committee, this application should be mailed no later than 15 December.*
3. To facilitate review of this application, the Medical College Admission Test should be taken, if possible, in May of the year in which the application is submitted.
4. Only those applicants who are accepted for the program are requested to complete an application form for the Graduate School. The Graduate Record Examination is not required for this purpose.
5. Applicants are notified about acceptance into the program on or about 15 February.

Additional information may be obtained by writing Salvatore V. Pizzo, M.D., Ph.D., Director, Medical Scientist Training Program, Box 3712, Duke University Medical Center, Durham, North Carolina 27710.

The Medical Historian Program. The Medical Historian Program is conducted under the auspices of the School of Medicine and the Graduate School. Two courses are offered: a combined M.D.-Ph.D. (extending over six years) and a M.D.-M.A. (four or five years depending on use of summer sessions). The choice of Ph.D. or M.A. depends on the career goals of the students. Those wishing to put a major effort into scholarly activities in the history of medicine will generally be advised to undertake the Ph.D.

The basic requirements for both courses are two academic years in the School of Medicine consisting of core basic sciences in the first year and core clinical rotations in the

second year. The student then enters the Department of History. A range of appropriate courses are available. Following the completion of the Ph.D. or M.A., the student resumes requirements for the M.D. degree.

Application and Admissions Procedures. Applicants must meet the requirements for admission to the School of Medicine and the Graduate School in the Department of History. Candidates who have completed two years of medical school will also be considered. In addition to the minimum requirements established by the School of Medicine and the Graduate School, courses in history and in the history and philosophy of science will count in the selection of candidates.

Applicants should complete and submit an application form to the Duke University School of Medicine and to the Graduate School for admission to the Department of History.

Additional information may be obtained by writing to: Peter C. English, M.D., Ph.D., Box 3420, Duke University Medical Center, Durham, North Carolina 27710.

The Medicine and Public Policy Program. This program, which normally requires a maximum of five years to complete, is offered to meet the growing demand for persons who combine medical skills and training with a capacity for analytic public decision-making. It aims at training those persons with requisite talent to be leaders in the development and implementation of health policy at all levels of government. Such leadership might be provided as an elected or career public official, as a leader of medical professional organizations, or as a practicing physician or medical scholar active in public affairs.

Utilizing the faculty and resources of the School of Medicine and the Institute of Policy Sciences and Public Affairs, the program offers students a multidisciplinary education that aims at providing:

1. A complete course of study in basic medical sciences and clinical training in the practice of medicine identical in scope and rigor with the education received by students enrolled in the Doctor of Medicine program alone;
2. Familiarity with the organization and financing of health services, with particular focus on the economics and politics of health care;
3. An understanding of the political, bureaucratic and social processes that define public problems and limit alternative approaches to their solutions;
4. A capacity for quantitative and logical methods of analysis useful in forecasting and appraising policy consequences and in evaluating existing policies;
5. An understanding of the uses and limitations of various analytic techniques and an awareness of the value considerations and ethical choices implicit in particular policy alternatives.

During the first two years at Duke, students enroll in the normal course of study in the School of Medicine. In the third year, course work shifts primarily to the institute. In the fourth year, students do most of their work in the School of Medicine and complete a client-oriented study of a particular problem in health policy. During the fifth year, students complete their requirements in the School of Medicine, at the completion of which they receive both the M.D. and A.M. in public policy sciences degrees.

Admissions. Students may apply for admission to the program in medicine and policy sciences concurrent with application to the School of Medicine or during their first or second years.

Applications. Requests for applications and specific questions about the program should be addressed to the Director of Graduate Studies, Institute of Policy Sciences and Public Affairs, P.O. Box 4875, Duke Station, Durham, North Carolina 27706.

The M.D.-J.D. Program. The School of Medicine and the School of Law of Duke University jointly sponsor a program of combined medical and legal education. The pro-

gram provides an opportunity to acquire a full basic study of the two fields. Upon satisfactory completion of the required course of study, candidates will be awarded both the M.D. and the J.D. degrees.

Course of Study. The student in the M.D.-J.D. Program generally begins a six-year course of study in the School of Medicine. As in the regular M.D. Program, the first year is devoted to the basic medical sciences and the second year to the basic clinical disciplines. At this point the student enters the School of Law, where the first-year curriculum is the same as that of other law students. During the next two years the student takes approximately one and one-half semesters in the law curriculum, including available health law courses, and then may apply up to twelve additional hours of medical school courses toward the law degree. The sixth and final year is spent in elective clinical work in the Medical School tailored to the student's specialized needs. In addition, the student completes eighteen semester hours, or two summer sessions, of elective basic science work.

Eligibility. Applicants for the M.D.-J.D. Program must qualify for admission to both the School of Medicine and the School of Law. The usual approach is to apply for both schools simultaneously, thus reserving a place in the program prior to arrival. Applications are also accepted from members of the first and second year medical school class for admission to the School of Law and from the second year law school class for admission to the School of Medicine.

Application Procedure. Application forms for the School of Law may be obtained by writing to the Office of Admissions, Duke University School of Law, Durham, North Carolina 27706. Applications for the School of Medicine shall be made by utilizing the AMCAS procedure described in this bulletin.

Deadlines. For those seeking simultaneous admission to both schools: at the end of the junior year take the new Medical College Admissions Test (MCAT) and the Law School Aptitude Test (LSAT).

For the Medical School complete the AMCAS application procedures and upon receipt of the supplemental application form from Duke, check the box indicating M.D.-J.D. Program. Deadline for AMCAS procedure is November 1. There is no deadline for the Law School but January 15 or earlier submission is suggested.

The M.D.-M.P.H. Program. Students enrolled in the School of Medicine, after satisfactory completion of the first two years of the regular curriculum, may request approval to seek a Master of Public Health degree at the University of North Carolina, Chapel Hill, or at another approved institution. The program is designed to train physicians in epidemiology, biostatistics, environmental and occupational health, and in planning, administering, and evaluating health care delivery systems. Upon receipt of the M.P.H. degree, students are awarded one half year (18 units) of elective credit toward the M.D. degree. This credit award, to be made by the Dean for Medical Education, may be prorated between clinical and basic elective units depending upon the course of study pursued by the student.

For additional information, interested students should contact George R. Parkerson, Jr., M.D., M.P.H., Department of Community and Family Medicine, Duke University School of Medicine, Durham, North Carolina 27710 at the beginning of the second year.

Commencement. Graduation exercises are held once a year, in May, when degrees are conferred on, and diplomas are issued to, those who have completed requirements by the end of the spring semester. Those who complete degree requirements at the end of the fall or summer terms receive diplomas dated 30 December or 1 September, respectively. There is a delay of about one month in the mailing of September and December diplomas because diplomas cannot be issued until they are approved by the Academic Council and the Board of Trustees.

Graduate Medical Education

Residencies. Appointments are from 1 July through 30 June with few exceptions. Residents receive stipends, professional liability insurance, disability insurance, life insurance, uniforms, and laundry of uniforms.

Residencies offered with the chairman or chief of each service are as follows:

Anesthesiology	(Chm.) David Watkins, M.D., Ph.D.
Family Medicine	(Chm.) George Parkerson, Jr., M.D.
Internal Medicine	(Chm.) Joseph Greenfield, M.D.
Dermatology	(Chf.) Sheldon Pinnell, M.D.
Neurology	(Chf.) Allen Roses, M.D.
Obstetrics and Gynecology	(Chm.) Charles Hammond, M.D.
Ophthalmology	(Chm.) Robert Machemer, M.D.
Pathology	(Chm.) Robert Jennings, M.D.
Pediatrics	(Chm.) Samuel L. Katz, M.D.
Pediatric Allergy	(Chf.) Rebecca Buckley, M.D.
Pediatric Cardiology	(Chf.) Madison S. Spach, M.D.
Psychiatry	(Chm.) Bernard Carroll, B.M., B.S., Ph.D.
Radiology	(Chm.) Carl Ravin, M.D.
Imaging	(Chf.) Carl Ravin, M.D.
Nuclear Medicine	(Chf.) R. Edward Coleman, M.D.
Radiology Oncology	(Chf.) Leonard Prosnitz, M.D.
Surgery	(Chm.) David C. Sabiston, Jr., M.D.
General Surgery	(Chf.) William G. Shingleton, M.D.
Neurosurgery	(Chf.) Robert H. Wilkins, M.D.
Oral Surgery	(Chf.) John Angelillo, D.D.S., M.D.
Orthopaedic Surgery	(Chf.) James R. Urbaniak, M.D.
Otolaryngology	(Chf.) William R. Hudson, M.D.
Plastic Surgery	(Chf.) Donald J. Serafin, M.D.
Thoracic Surgery	(Chf.) David C. Sabiston, Jr., M.D.
Urologic Surgery	(Chf.) David F. Paulson, M.D.

Duke University Medical Center is a participating member of the National Resident Matching Program, One American Plaza, Suite 807, Evanston, Illinois 60201, and all applicants for first-year post-medical school appointments must register with this program.

Both men and women graduates of any L.C.M.E.-accredited medical school are eligible for appointment and all applicants will be considered without regard to race, color, religion, sex, or national origin.

Requests for application forms and information about straight residencies should be addressed to the Chairman of the service under which training is desired. A transcript of the medical school record is required, and must either accompany the application or be furnished by the Dean of the Medical School.

Graduates of medical schools outside the United States and Canada must hold a valid standard or interim certificate of the Educational Commission for Foreign Medical Graduates (ECFMG), 3624 Market Street, Philadelphia, Pennsylvania 19104, to be considered for appointment to residencies. Physicians who are not U.S. citizens or permanent residents must have passed the Foreign Medical Graduate Examination in the Medical Sciences (FMGEMS) or the Visa Qualifying Examination (VQE) to be eligible for a visa. An application which does not include a copy of a valid ECFMG certificate and evidence of passage of the FMGEMS or VQE will be considered incomplete and may be discarded without further notice to the applicant. First-year positions are rarely available for foreign medical graduates. For further information contact Catheryn Cotten, International Office, Box 3882, Duke University Medical Center, Durham, North Carolina 27710.

Reasonable requests for reduced scheduling will be considered. Inquiries should be directed to the training program directors of approved residencies or to the Office of House Staff Affairs. For further information, please contact Mary C. Fendt, Administrator, House Staff Office, Box 3951, Duke University Medical Center, Durham, North Carolina 27710.

The Durham Veterans Administration Medical Center adjoins the Duke University Campus and is operated under the supervision of the Vice-President's Committee of the Duke University Medical Center. The full-time professional staff of the V.A. Medical Center are all faculty members of the School of Medicine. All training programs are integrated with corresponding programs at the Duke University Medical Center, including rotation of house officers at each hospital.

All residents and clinical fellows are required to be licensed by the State of North Carolina. This may be accomplished by (1) a residency training license that covers only training by Duke and is not convertible to a full North Carolina license or (2) a full North Carolina license that is a complete medical license obtained either by State Boards (North Carolina Boards can only be taken upon completion of internship) or National Boards and is fully reciprocal with other states for full licenses. Duke University Medical Center cannot make applications for house staff. Since house staff members must have the license before beginning duties, arrangements for the license should be made in advance. All incoming house staff *must* contact Bryant Paris, North Carolina State Board of Medical Examiners, 222 North Person Street, Raleigh, North Carolina 27601, for current licensure requirements.

Application forms and information for residencies or fellowships may be obtained by writing the chairman of the appropriate department, Duke University Medical Center, Durham, North Carolina 27710.

Postgraduate Education

Continuing Medical Education. From its beginning in 1930, Duke has been committed to and actively engaged in a program of training young men and women for academic and scientific careers, as well as for the practice of medicine. This philosophy in concert with the aims and goals of both the School of Medicine and Duke University Hospital has fostered the development of continuing medical education, the mechanism for providing opportunities to continue the pursuit of excellence in medical education.

Mission. The Duke University Medical Center with its School of Medicine and Hospital are committed to the continuing education of physicians and other health professionals. A goal of improving patient care provides the impetus of programs for continuation of physician education following undergraduate and graduate medical education. The medical administrators of the Medical Center recognize that there is an educational responsibility which is included in the medical mission of the institution.

Within the purview of the Duke University School of Medicine and the academic affairs branch of the Medical Center, the Office of Continuing Education has been designated to implement the institution's commitment to continuing medical education (CME).

Policies and Guidelines. The Dean of Medical Education appoints the Director of Continuing Medical Education. The Director is responsible for providing leadership, liaison, and recommendations for departmental and institutional CME activities.

To assist the Director of Continuing Medical Education, the Dean has appointed a committee that assists with the implementation of continuing medical education. The committee is composed of representatives from the departments, special divisions, or special areas of the Medical Center. The committee is charged with advising on policies and procedures for the development of continuing medical education within the School of Medicine and the Medical Center.

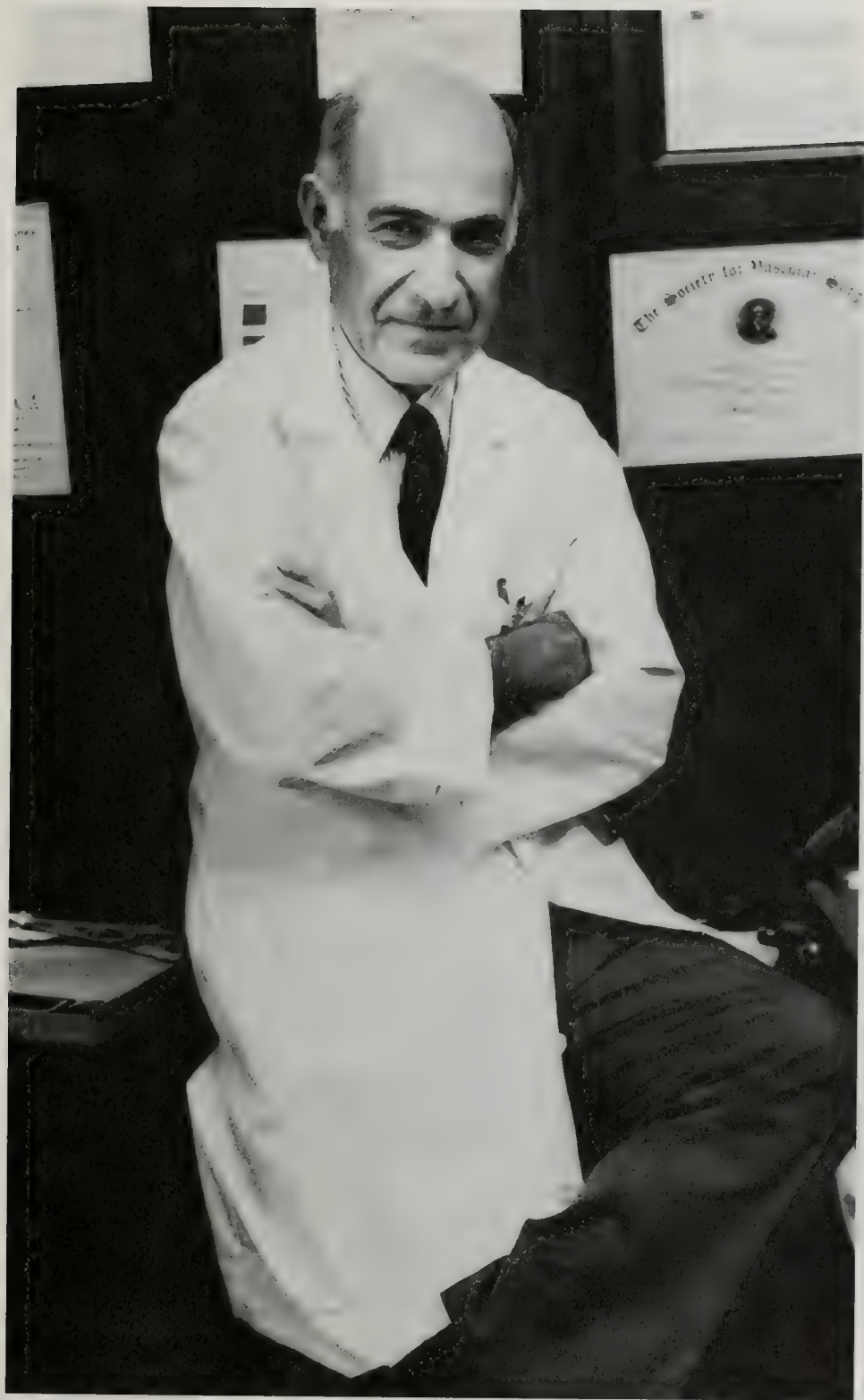
The Office of Continuing Medical Education and the committee are jointly charged with the following responsibilities:

1. Advise on development of CME policies and procedures;
2. Initiate CME activities;
3. Maintain the CME program's national accreditation;
4. Offer CME credit for approved activities;
5. Monitor CME activity development and execution in response to the needs of practicing physicians;

6. Maintain responsibility of recording CME credits issued to participants of all Duke University School of Medicine approved activities;
7. Provide guidelines, recommendations, and support for new and innovative CME activities following appropriate needs assessment;
8. Initiate CME activities in cooperation with departments of the Duke University Medical Center, the Office of Medical Alumni Affairs, and other appropriate organizations within the institution that embrace the CME commitment to alumni and practicing clinicians in the state, region, and nation; and,
9. Seek new sources of additional support for CME programming and development.

Numerous formal postgraduate courses are given throughout the entire year for physicians in general practice as well as in all specialties. Conferences and tutorial seminars are also available to any physician who desires to attend and participate. Physicians in practice may make arrangements for a period of one day or more for courses tailored to their particular interests. These personal contacts with senior faculty and residents, including patient examinations as well as follow-up care, provide in-house training experience.

For additional information, please contact Roy T. Parker, M.D., Director, or Cynthia C. Easterling, M.Ed., Coordinator, Continuing Education, Duke University School of Medicine, Box 3108, Durham, North Carolina 27710, (919) 684-6878 or toll free in the U.S. 1-800-222-9984.



Student Life



The University

Duke University, located in Durham, North Carolina, has an enrollment of 9,694 students from all fifty states and from many foreign countries. Currently, Trinity College of Arts and Sciences, the Graduate School, and the Schools of Business Administration, Divinity, Engineering, Forestry, Law, Medicine, and Nursing comprise the University.

Durham, with a population of more than 100,000, is in the Piedmont region of North Carolina, which has easy access to the sea coast and mountains. It is one of the three cities bounding the Research Triangle Park where numerous private research laboratories and governmental agencies are located. Duke University is twenty-five miles from North Carolina State University in Raleigh and eight miles from the University of North Carolina at Chapel Hill.

Conduct of Students

Duke University expects and will require of all its students cooperation in developing and maintaining high standards of scholarship and conduct.

All students are subject to the rules and regulations of the University which are currently in effect, or which, from time to time, are put into effect by the appropriate authorities of the University.

Any student, in accepting admission, indicates the willingness to subscribe to and be governed by these rules and regulations and acknowledges the right of the University to take such disciplinary action, including suspension and/or expulsion, as may be deemed appropriate, for failure to abide by such rules and regulations, or for conduct adjudged unsatisfactory or detrimental to the University.

Living Accommodations

Duke University has several residential facilities in which single graduate and professional students live, however, married student housing is not available. Married students should refer to the section entitled Off-campus Housing.

Town House Apartments. Town House Apartments, located about three blocks from the main East-West Campus bus line, is a thirty-two-unit complex which houses single graduate and professional school students. These apartments are more spacious than most apartments found on campus or in Durham. Because of its location away from the academic facilities, students find that these apartments offer a change from normal campus life and activities. They are available for continuous occupancy throughout the calendar year.

Each air-conditioned apartment includes a living room, a master bedroom, a smaller bedroom, a bath and a half, and an all-electric kitchen with a dining area. Spacious closets and storage spaces are provided within each apartment. A swimming pool, located in the center of the complex, is open during the late spring and throughout the summer months.

Occupants must make arrangements with the local utility companies to pay for electricity, gas, and telephone service. These companies usually require a deposit when initial applications for service are made. Utility companies should be contacted prior to arrival as it usually takes several days to obtain service.

Central Campus Apartments. During 1975, Duke University completed a 500-unit apartment complex. Apartments are available throughout the calendar year for continuous occupancy to single students attending graduate and professional schools.

All Central Campus Apartments are completely furnished by the University. An itemization of furnishings is included with the floor plans sent out in the application packet.

A swimming pool, located in the center of the complex, is open during the late spring and throughout the summer months. Additional facilities include a pub, convenience store, tennis courts and basketball courts.

All utilities—water, heat, air-conditioning, and electricity—are provided. Telephones, which are provided in preinstalled locations in each apartment, are serviced through Duke University's Tel-Com telephone service. Residents are responsible for having their phones connected.

Efficiency, two-bedroom, and three-bedroom apartments are rented to single students. Efficiency units are very limited in number and are not generally available to new students. Spaces in apartments for single students are provided on an individual basis with each student paying rent per academic term to the University. This method permits students to share apartments with others of their choice. When this is impractical, the Department of Housing Management strives to place persons with similar interests together.

Modular Homes. The University owns six prefabricated modular homes that are located one block from the main East-West Campus bus line. Three of the three-bedroom houses are occupied by single graduate and professional students. The houses, completely furnished, provide more privacy than most apartments and are available to single graduate and professional students for continuous occupancy throughout the calendar year.

In addition to having three bedrooms, each home contains a full bath, an all electric kitchen, a dining area, and a living room. Sliding glass doors in the living room open onto a wooden deck. An outside storage area is provided in addition to spacious closets within the home. Except for the bathroom, kitchen, and dining area, the homes are completely carpeted and paneled.

Residents of the modular homes are responsible for making arrangements with local utility companies for electricity and telephone services.

Application Procedures. When students are informed of their acceptance to the Medical School they will also receive a postcard on which to indicate preference for University housing. This postcard should be returned to the Department of Housing Management. Detailed information on the types of accommodations and application forms will be forwarded to the accepted student. Assignment to all University housing is made on a first-apply, first-assigned basis, and it is not guaranteed.

Off-campus Housing. The Department of Housing Management maintains a listing of rental apartments, rooms and houses provided by property owners or real estate agencies in Durham. These listings are available in the department only; during the summer an assistant is available to answer questions and aid students in their attempt to obtain

housing off campus. Information on commercial complexes in the Durham area may be obtained by indicating a preference for off-campus housing on the postcard which you will receive with your acceptance notice. Except for assuring that owners sign a statement of nondiscrimination, off-campus property is in no way verified and neither the University nor its agents negotiate between owners and interested parties.

The search for accommodations should begin as soon as possible after acceptance to the Medical School. A visit of two or three days will allow you the opportunity to make use of the off-campus service and to inspect personally the availabilities.

Dining Facilities. In addition to the Medical Center cafeteria, a number of dining facilities are located within a short distance from the Medical Center. Duke University Food Services (DUFS) operates a variety of dining facilities, including "all you can eat" cafeterias, a la carte restaurants, fast food facilities, salad bars and elegant dining restaurants. The seventeen DUFS locations on campus give Duke students virtually unlimited dining options.

Services Available

Student Personal and Professional Advisory Program. One important objective of Duke University School of Medicine is to promote an informal, cordial student-faculty relationship. It is also felt that this type of relationship would promote better curriculum advising and career advising for the student. Each entering student is assigned to one of four Advisory Deans, who oversees his/her academic progress and with whom the student will meet in small groups and individually for personal advising, curriculum planning, and career counseling. A full-time Associate Dean is available to students for personal and crisis counseling or referral on a strictly confidential basis.

Student Health Service. In recognition of the unique health needs of medical students whose activities bring them into far greater contact with communicable disease than the average university student, a special health program for medical students has been established. Each freshman will submit, prior to entry, the standard Duke Health History Report Form to be completed by the student and reviewed and signed by a physician. Before entry into the first year class, all students must present written proof of current immunization status. A special form will be provided for this purpose. Proof of immunity to polio, mumps, measles, rubella, diphtheria, and tetanus must be presented before matriculation. Students will not be permitted to remain in school unless these requirements are met.

The objective of the Student Health Service is to provide medical care and advice to students. The main components of the Health Service include the Student Health Clinic and the Health Education Center in the Pickens Health Center, located at the corner of Trent Street and Erwin Road, and the infirmary located on the fourth floor of Duke Hospital, South Division. For treatment of illnesses or injuries (other than life threatening emergencies), students should first contact the Student Health Clinic for an appointment (684-6721).

The Student Health Clinic is open during regular and summer sessions to all students. During the regular academic year there are extended hours into the early evening on weekdays, and limited weekend hours. Outside regular clinic hours, students should call or visit the University Infirmary (684-3367) open twenty-four hours daily during regular academic sessions. Transportation to Student Health Clinic or Infirmary may be made by the campus bus or via Duke Public Safety Officers. Emergency transportation to the clinic or Duke Emergency room is also available.

A mandatory fee (Student Health Fee) is assessed each academic session to all students, and this covers most services offered within the Pickens Health Center, the Infirmary, and Counseling and Psychological Services (see separate listing in this bulletin). More information on covered services is available in the Student Health Program

brochure, and in the CAPS brochure. The Student Health Program's health educators can also assist with questions in this and other areas. While the facilities of the Pickens Health Center are available to spouses and dependent children of married students, their care is not covered by the Student Health Fee. Other resources within the Duke University Medical Center are available to all Duke students and their spouses and children, however charges for these services (including Emergency Room services) are the responsibility of the student.

The Duke Student Accident and Sickness Policy. Recognizing that many students will require assistance beyond that offered through the Student Health Service and covered by the Student Health Fee, the University also makes available a plan of accident and sickness insurance at a reasonable charge. This plan is designed to complement services normally not accessible to students through the Student Health Service fee coverage (hospitalization, surgery, emergency room services, specialty consultations, etc.). It covers students both on and off campus, at home, or while traveling between home and school during vacation periods throughout the one year term of the policy. There are provisions in the plan for coverage of the married student's family. A full description of these provisions and other benefits of the Duke Student Accident and Sickness Insurance policy is provided in a brochure sent through the Bursar's office.

All full-time and part-time degree candidate students are required to enroll in the Student Accident and Sickness Insurance Policy unless they show evidence that they are covered by other generally comparable insurance. This evidence of comparable insurance coverage is given by completing the appropriate waiver statement on the remittance form of the University invoice. This statement requires that the name of the insurance company and the policy number be indicated as well as the signature of the student or parent. While the requirement for coverage may be waived by indicating, in writing, willingness to assume the medical costs of any sickness or accident, the Student Health Service strongly recommends that all students be covered by accident and sickness insurance.

Counseling and Psychological Services. Counseling and Psychological Services (CAPS) is located in Suite 214, Old Chemistry Building, on West Campus next to the Medical School. Services are available to all undergraduate, graduate, and professional students enrolled at Duke University. CAPS provides a coordinated and comprehensive range of services including evaluation and brief counseling/ psychotherapy regarding a wide range of concerns, including such issues as self-esteem and identity, family relationships, academic performance, dating, intimacy and sexual concerns. Career counseling is also provided and a career library with sources of occupational and educational information is maintained.

Each year CAPS offers a series of self-development seminars focusing on skill development and special interests. Groups may cover such topics as coping with stress, enriching relationships, dealing with excessive perfectionism, and coping with bulimia. Interested students may contact CAPS for further information.

The professional staff is composed of clinical social workers, psychiatrists, and clinical and counseling psychologists who are experienced in working with young adults. CAPS maintains a policy of *strict confidentiality* about each student's contact with the CAPS staff. Such information can be released, however, upon the student's specific written authorization.

Initial evaluation and brief counseling/psychotherapy, as well as skills development seminars, are covered by payment of the student health fee. There are no additional costs for these services. If appropriate, a referral may be made to other staff members or to a variety of local resources including multidisciplinary mental health professionals in private practice and clinic settings.

Appointments may be made by telephone or at the CAPS office. Office hours are Monday through Friday between 8 A.M. and 5 P.M. If a student's concern needs immediate

attention, it should be indicated by the student and every effort will be made for a counselor to talk with the student at the earliest possible time.

Additionally, standardized testing is administered for the University community by CAPS. These include the Graduate Record Examination (GRE), Medical College Admission Test (MCAT), Law School Admission Test (LSAT), and Graduate Management Admission Test (GMAT).

Another important function of CAPS is the availability of the staff to the entire University community for consultation and participation in educational activities regarding student development and general mental health issues. The staff works with other campus personnel including administrators, faculty, the Student Health Service, Religious Life Staff, Residential Advisers, and student groups. CAPS staff members are available to faculty, staff, and students daily by phone or by appointment for consultation about student issues and concerns.

For additional information, call CAPS 919/684-5100.

Student and Professional Organizations

Alpha Omega Alpha. Alpha Omega Alpha Honorary Medical Fraternity was organized nationally in 1902 and the Duke Chapter (North Carolina Alpha) was chartered in 1931. The aims of this society are the promotion of scholarship and research in medical schools, the encouragement of high standards of character and conduct among students and graduates, and the recognition of high attainment in medical science, practice, and related fields. Students who have demonstrated leadership and academic promise of future achievement are elected. Membership is limited to no more than one sixth of any graduating class and of these as many as one half may be elected in the junior year. Honorary membership in the society, as well as honorary alumni and faculty membership, may also be conferred upon certain physicians who have distinguished themselves in the various areas of medical teaching, research, and practice.

Davison Society. All medical students are dues-paying members of the Davison Society, named for the first Dean of Duke Medical School. The society is governed by the Davison Council which consists of elected officers (President, Service Vice-President, Social Vice-President, Secretary, Treasurer, and Intramural Sports Chairman) and elected representatives from each class. Primary responsibilities of the council include: chartering of medical student groups, budgeting funds for student groups and medical school activities, organization of medical school activities and social events, appointment of medical students to Medical Center and University committees, and representing student views to the pertinent faculty and administration.

Medical student groups affiliated with, and in the past funded by the Davison Society include: the American Medical Student Association, American Medical Women's Association, the North Carolina Student Rural Health Coalition, the North Carolina Medical Society Student Chapter, the Student National Medical Association, and the East End Health Clinic.

Meetings of the council are open to all students and minutes of council meetings are posted. The members of the council are elected in the spring of each year except for the first year class representatives who are elected during the first fall after matriculation.

The Engel Society. The Engel Society, established in 1966 as a memorial to Professor Frank L. Engel, is designed to promote intellectual and social interaction between students and faculty. Membership is limited to six junior students and six senior students who have demonstrated an inquisitive nature, humanitarian interests, and high scholastic ability. Four faculty members are selected annually by members of the society for three year terms. Six dinner meetings with guest speakers are held each year. Other students may be invited to participate.

Duke University Medical Alumni Association. The Duke Medical Alumni Association consists of nearly 8,000 members including all graduates of the Medical School,

past and present faculty, and all past and present house officers of Duke Hospital. A magazine is sent to all members three times annually. November reunions are held each year in Durham. Alumni groups meet in several states and meetings are held in conjunction with the meetings of the American College of Physicians, the Southern Medical Association, the North Carolina Medical Society, and several departmental specialty society meetings. Several social functions for medical students are sponsored annually, as is a student seminar. The Medical Alumni Association also maintains a listing of alumni willing to host students in their local area. One of the more popular programs is the Alumni Candy Jar.

Officers. President: Joseph Farmer, M.D., 1962, Durham, North Carolina; Secretary-Treasurer: Jay M. Arena, M.D., 1932, Durham, North Carolina; R. C. "Bucky" Waters, Assistant Vice-President for Health Affairs-Alumni and Development; Janet Sanfilippo, Director, Medical Alumni Affairs.

Awards and Prizes

Davison Scholarship. The Davison Scholarship award, consisting of \$2,000, is supported by the Davison Club in the memory of Dean Davison to enable a medical student to participate in a clinical science elective outside the United States in an area of primary care. Any student eligible to study away may apply for the award. For consideration for the scholarship, the elective must be approved by the Study Away Committee.

Thomas Jefferson Award. This award, consisting of \$100, a certificate, and a book recognizes a graduating senior student who has made outstanding contributions to the University or to fields which have not been traditionally confined to science and medicine. The award is given by the Awards Committee to a graduating senior.

The Joseph Eldridge Markee Memorial Award in Anatomy. This award, donated by the friends and family of the late Dr. J. E. Markee, James B. Duke Professor of Anatomy and Chairman of the Department of Anatomy from 1943 to 1966, consists of a certificate, medallion, and cash award of \$200. It is presented by the Department of Anatomy to the most outstanding student in anatomy during the first year in the Medical School.

C. V. Mosby Book Award. Three graduating senior students are selected by the Awards Committee for active participation in service to the students, community, and medical school. The award is a Mosby book of the student's selection.

Trent Prize. An annual award of \$100 is given to a Duke medical student for the best essay on any topic in the history of medicine and allied sciences. Mary Trent Semans established this award in memory of the late Josiah C. Trent to encourage students to undertake independent work in the history of medicine and to utilize the resources of the Trent Collection.

Upjohn Award. The award consists of \$200 cash and a certificate and is presented to a Duke graduating senior for excellence in community health science projects and service to the community.

Sandoz Award. This award is given to a senior student who has done distinguished work in basic science research or clinical research. Students will be nominated for this award by departmental chairmen with whom their work has been done. The work must have been presented at the AOA symposium and voted upon by the Awards Committee. It consists of a plaque and a check for \$100 and is limited to one student.

Ciba Award. This award is given to a third year student who has contributed to the health care of the community. Students are nominated by the student body and voted upon by them. The award consists of the complete set of medical illustrations and text by Frank Netter.

Other Awards. Throughout the year, Duke Medical School receives notification of awards consisting of books, money, and/or plaques or medals to be awarded to students

in a variety of fields at all medical schools on a national competitive basis selected by committees of the sponsoring organizations. These awards are screened by the Dean's office and publicized appropriately.

Admissions



Admission Procedures

Good study habits, intelligence, character, and integrity are essential qualifications for admission. Beyond this, premedical students should strive for an education that develops abilities to observe critically, think analytically, and work independently. Though a knowledge of basic scientific principles should be secured, the competence with which premedical students conduct their undergraduate careers is of more importance than the specific subjects which they study.

Application for Admission. The Duke University School of Medicine participates in the American Medical College Application Service (AMCAS). Application materials may be obtained from a premedical adviser or by writing: American Medical College Application Service, Association of American Medical Colleges, Suite 301, 1776 Massachusetts Avenue, N.W., Washington, DC 20036.

Upon receipt of the application materials from AMCAS, a supplemental application and other information will be mailed which will serve as notification of receipt of the application from AMCAS. Applications are received by AMCAS any time after June 15 until November 1. Applicants are urged to file their applications as early as possible. The deadline for receipt of the supplemental application is 15 December.

Upon receipt of the supplemental application, two faculty members will determine whether or not to proceed with an interview.

Requirements. Admission to the School of Medicine requires a minimum of ninety hours of approved college credit including one year of college English (consisting primarily of expository English composition), one year of inorganic chemistry, one year of organic chemistry, one year of physics, one year of biology and/or zoology, and one year of calculus. An introductory course in biochemistry during the senior year would be helpful. All science requirements must be completed not more than seven years prior to entrance.

The Medical College Admission Test, administered by the American College Testing Programs and Services, P.O. Box 414, Iowa City, Iowa 52240, is required of all applicants. This test is given in April and September of each year at numerous colleges throughout the United States.

Students should consult their premedical advisers and arrange to take this test in April of the year they plan to submit applications for admission.

Selection

The earliest date of notification of acceptance is 1 November for students entering the following August. Data on each candidate are carefully evaluated by the Committee on Admissions. A personal interview will be conducted at Duke for those students with satisfactory credentials. Candidates may have personal interviews with regional representatives of the Admissions Committee. Those candidates who demonstrate the most promise for exceptional performance in their future practice of medicine are admitted on the basis of merit and are notified as soon as possible whether or not they have been accepted. In order to ensure enrollment, accepted candidates must return a signed agreement and a \$50 deposit within three weeks after notification. Since admission is offered a considerable period in advance of matriculation, it is provisional upon the successful completion of any incomplete premedical required subjects as well as the continued demonstration of scholarship in college course work.

Transfer

Applicants who have completed the basic sciences in other medical schools will be considered for transfer only as space permits. Such transfer students are required to complete the second and fourth years of the Duke curriculum.

Part I of the National Board Examination or MSKP is a requirement for transfer applicants. Duke does not sponsor applicants to take the National Board Examination, although the scores must be received as part of the evaluation procedure.



The policy governing tuition for transfer students is that they will pay the same tuition in their initial year and all subsequent years as the class which they enter.

Requests for application materials should be sent to the Committee on Admissions, Box 3710, Duke University Medical Center, Durham, North Carolina 27710.

Requests for application materials are accepted after 15 November. 1 March is the deadline date for the receipt of applications. Personal interviews will be arranged for those with satisfactory credentials. Transfers into the freshman or senior year are not permitted.

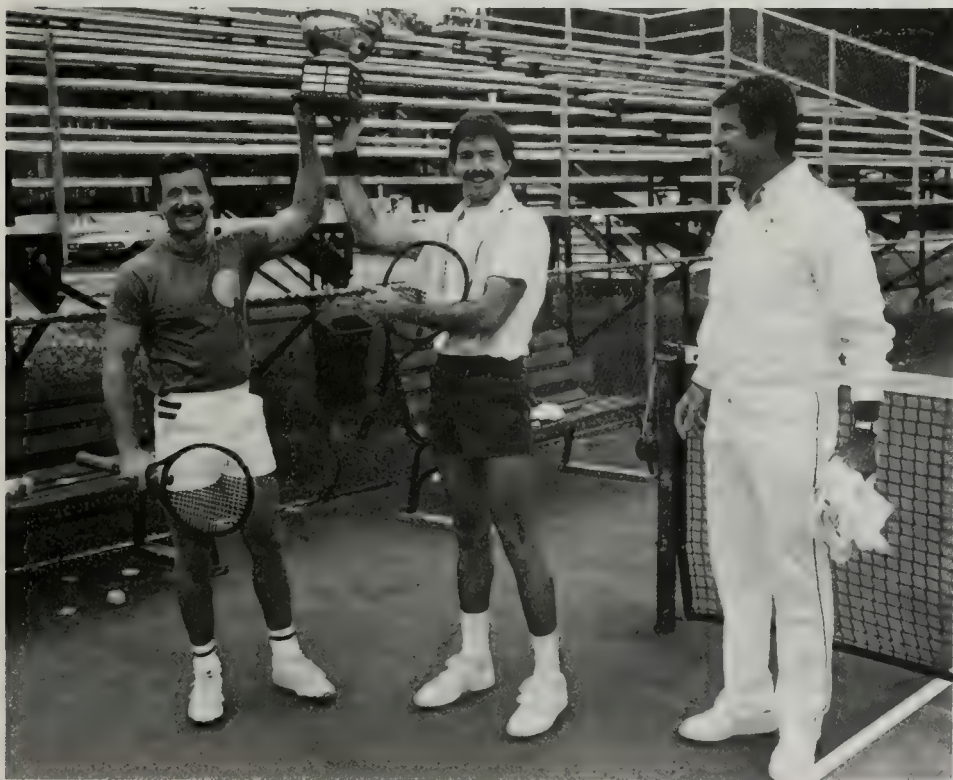
Advanced Placement

Advanced placement is offered to qualified first-year students on an optional basis for the following first semester courses: anatomy, biochemistry, genetics, and physiology. Students desiring consideration for advanced placement are required to take examinations in applicable subjects during the first week of medical school. Those who are granted and accept advanced placement for a specific course are not required to enroll in that course but will be responsible for arranging mutually satisfactory substitutions with the appropriate department chairman.

Students who have been awarded Ph.D. degrees in biomedical or preclinical sciences may apply for a three-year program to obtain their M.D. degrees. This program consists of the regular core basic science courses required of all freshman medical students, core clinical rotations during the second year, followed by senior clinical electives.

Reapplication

Students who wish to apply for a second time should write AMCAS requesting new application forms. Supporting documents will be transferred to the new application file. These documents will be kept on file for three years.



Summary

Three years of college work, fifty dollars (\$50) nonrefundable application fee, fifty dollar (\$50) deposit within three weeks of notification of acceptance, and the Medical College Admission Test are required. The estimated class size in 1988-89 freshman class is 102.

Roster of Regional Representatives of Admissions Committee

Alabama:	<i>Birmingham</i> , Ben V. Branscomb; <i>Tuskegee</i> , Alexander W. Boone, Jr.
Alaska:	<i>Anchor Point</i> , Milo H. Fritz; <i>Sitka</i> , J. Paul Lunas
Arizona:	<i>Phoenix</i> , Robert H. Barnes; <i>Scottsdale</i> , Boyd H. Metcalf; <i>Tucson</i> , Ruth H. Capp
Arkansas:	<i>Little Rock</i> , Rosalind Smith Abernathy, E. Clinton Texter, Jr.
Australia:	Susan Lodewijiks
Belgium:	<i>Liege</i> , Emile F. LeClercq
California:	<i>Bakersfield</i> , Victor S. Constantine; <i>Berkeley</i> , Bruce Africa; <i>Beverly Hills</i> , Ben Kohn; <i>Burlingame</i> , J. M. Javer, Andrew Nadell; <i>Fairfield</i> , William R. Nesbitt; <i>Fontana</i> , Henry L. Burks; <i>Irvine</i> , A. Brian Davis; <i>Los Angeles</i> , Robert Feder, Walter Lusk, Kenneth P. Ramm, Douglas F. Smiley; <i>Norwalk</i> , Garrett F. Saikley; <i>Orange</i> , George Hayter; <i>Palo Alto</i> , Gustave Freeman, James B. Golden, John B. Simpson; <i>Redlands</i> , Perry Dyke; <i>Riverside</i> , James S. Mayson; <i>San Diego</i> , Donald J. Williams; <i>San Francisco</i> , David S. Forth, R. Gray Patton, George W. Rutherford, Henry Safrit
Canada:	<i>Montreal</i> , J. E. Gibbons
Colorado:	<i>Colorado Springs</i> , John P. Tindall; <i>Denver</i> , Michael J. Jobin, Fred W. Schoonmaker, Charles Scoggin; <i>Englewood</i> , Bertram Goldberg
Connecticut:	<i>Greenwich</i> , Milton F. Campbell; <i>Hartford</i> , William H. Glass; <i>New Haven</i> , G. P. Beardsley, David J. Goodkind, Ned M. Shutkin; <i>Ridgefield</i> , George Margolis; <i>Waterford</i> , Henry B. Freye
District of Columbia:	Mona M. Shangold
England:	<i>Lakenheath</i> , Martha Ann McKnight
Florida:	<i>Dunedin</i> , Cathy Suslevich; <i>Hallandale</i> , Norman Moskowitz; <i>Jacksonville</i> , J. David Cahill; <i>Miami</i> , Stanley J. Cannon, James J. Hutson; <i>St. Petersburg</i> , David S. Hubbell; <i>South Miami</i> , Leonard A. Kalman; <i>Tampa</i> , Richard G. Connor, Americo A. Gonzalvo
Georgia:	<i>Atlanta</i> , Crawford F. Barnett, Jr.
Hawaii:	<i>Honolulu</i> , James G. Harrison; <i>Kailua</i> , Stanley Karansky; <i>Kealahou</i> , Thomas E. Austin
Idaho:	<i>Idaho Falls</i> , Reid H. Anderson
Illinois:	<i>Barrington</i> , George Pepper; <i>Chicago</i> , John H. Buehler, George H. Gardner, Daniel J. Pachman, John D. Utley, Milton Weinberg, Jr.; <i>Geneva</i> , Charles A. Hanson; <i>Monmouth</i> , Kenneth E. Ambrose; <i>Northbrook</i> , Donald R. Mundie; <i>Park Ridge</i> , Earl N. Solon
Indiana:	<i>Indianapolis</i> , Mark O. Farber, C. Conrad Johnston, Jr.
Kansas:	<i>Emporia</i> , Gould C. Garcia; <i>Lenexa</i> , David L. Smith
Kentucky:	<i>Louisville</i> , Billy Franklin Andrews, George I. Uhde
Louisiana:	<i>Fort Polk</i> , Hugh J. Donohue, Jr.; <i>New Orleans</i> , Nancy Haslett, Richard M. Paddison
Maine:	<i>South Freeport</i> , E. Charles Kunkle
Maryland:	<i>Baltimore</i> , C. Edward Leach, John Modlin; <i>Mt. Rainier</i> , Linda D. Green; <i>Olney</i> , Joseph Buffington
Massachusetts:	<i>Boston</i> , R. Wayne Alexander, Ann W. Crosson, Richard J. Kopelman, Britain Nicholson, Ellison C. Pierce, Jr., Stephen Sohn; <i>Cambridge</i> , Paul N. Chervin; <i>Hyannis</i> , Linda A. Bishop; <i>Newton Centre</i> , Bernard Levy; <i>Stoughton</i> , Philip A. Hourigan, Jr.; <i>Worcester</i> , Katherine S. Upchurch
Michigan:	<i>Detroit</i> , John J. Fath; <i>East Lansing</i> , William W. Blackburn II; <i>Grosse Pointe</i> , John M. Lesesne
Minnesota:	<i>Fairmont</i> , Lawrence T. Donovan; <i>Minneapolis</i> , James A. Halikas, Martin M. Oken, Richard L. Reece; <i>Rochester</i> , William Hazel, William M. O'Fallon
Missouri:	<i>Bridgeton</i> , Thomas J. Banton, Jr.; <i>Creve Couer</i> , Roman L. Patrick; <i>Kansas City</i> , Gerry Woods; <i>Springfield</i> , Norman C. Shealy; <i>St. Louis</i> , W. Edwin Dodson
Nebraska:	<i>Omaha</i> , Helen Starke
New Hampshire:	<i>Cornish</i> , William T. Davison; <i>Exeter</i> , Eric D. Lister; <i>Hanover</i> , R. J. Vanderlinde
New Jersey:	<i>Livingston</i> , Stephen J. Victor; <i>Montvale</i> , Steven P. Honickman; <i>Moorestown</i> , Michael S. Entmacher; <i>Morristown</i> , Philip K. Keats; <i>Paterson</i> , Linda F. Rankin; <i>Pompton Plains</i> , Charles W. Ross; <i>Summit</i> , Wayne S. Barber; <i>Watchung</i> , R. Christopher Stucky
New York:	<i>Endicott</i> , Vincent Giordano; <i>Ithaca</i> , John G. Maines; <i>New York</i> , Joan S. Adams, Michael Brownlee, Carl H. Fromer, David S. Goldman, Eddie L. Hoover, Bruce Horten, Lenard E. Jacobson, Seymour R. Kaplan, Michael J. Lepore, Phyllis C. Leppert, Robert A. Shimm, David N. Silvers, Nathan St. Amand; <i>Pittsford</i> , Rufus S. Bynum; <i>Rochester</i> ,

	David N. Broadbent, Martin Morse; <i>Syracuse</i> , L. Stewart Massad; <i>White Plains</i> , Harvey J. Cohen
North Dakota:	<i>Bismarck</i> , Robert B. Tudor
Ohio:	<i>Canton</i> , John A. Nadas; <i>Cincinnati</i> , Donald Rucknagel, Murray B. Sheldon, Jr.; <i>Cleveland</i> , Stephen E. Alpert; <i>Columbus</i> , Lucy R. Freedy, James V. Warren; <i>Elyria</i> , William L. Hassler; <i>Toledo</i> , George F. Alter
Oklahoma:	<i>Muskogee</i> , Robert H. Gibbs
Oregon:	<i>Eugene</i> , Paul W. Jones; <i>Portland</i> , Marcia Freed, Martin S. Schwartz
Pennsylvania:	<i>Bryn Mawr</i> , John V. Blady; <i>Camp Hill</i> , Alfred J. Sherman; <i>Dunmore</i> , Louis C. Waller; <i>Harrisburg</i> , Earl S. Moyer; <i>Johnstown</i> , W. Frederick Mayer; <i>Lancaster</i> , Richard D. Gentzler; <i>Philadelphia</i> , Max W. Fischbach, Mary Ann Forciea, John J. Furth, David M. Goodner, James R. Harp, Richard I. Katz, Sheila M. Katz, Mildred H. LaFontaine, Dianne M. Quinn, Graham E. Quinn, Alfred M. Sellers; <i>Pittsburgh</i> , Richard L. Green, Jack D. Myers; <i>Wynnewood</i> , Frank Kern; <i>State College</i> , Richard H. Dixon, Donald F. Mandetta
Puerto Rico:	<i>Santurce</i> , Rafael Hernandez-Saldana
Rhode Island:	<i>Lincoln</i> , Henry G. Magendantz; <i>Providence</i> , Benjamin T. Jackson
South Carolina:	<i>Charleston</i> , Edward Frost Parker; <i>Columbia</i> , Collin F. Baker, Ben N. Miller, James M. Timmons; <i>Greenville</i> , Raymond C. Ramage
South Dakota:	<i>Sioux Falls</i> , Charles Beauchamp
Tennessee:	<i>Chattanooga</i> , Roger G. Vieth; <i>Knoxville</i> , Alan Solomon; <i>Memphis</i> , Peter D. Jones; <i>Nashville</i> , Alexander C. McLeod, Greer Ricketson
Texas:	<i>Amarillo</i> , Gayle H. Bickers; <i>Austin</i> , Frank A. Morris, Jr.; <i>Dallas</i> , Reuben H. Adams, W. Crockett Cheers, Jr., William Shapiro; <i>Fort Worth</i> , Alan D. Davis; <i>Galveston</i> , J. Andrew Grant, Jr.; <i>Houston</i> , Kenneth Gould, Jr., Barry N. Hyman, Eugenie Kleinerman, Elizabeth B. Powell, H. Grant Taylor, Leonard A. Zwelling; <i>Lubbock</i> , George E. Bacon; <i>San Antonio</i> , Frederick L. Grover
Utah:	<i>Salt Lake City</i> , N. Branson Call, Andrew Deiss, William A. Gay, Jr.
Vermont:	<i>Burlington</i> , Edward S. Horton
Virginia:	<i>Richmond</i> , R. Lewis Wright; <i>Waynesboro</i> , Thomas L. Gorsuch
Washington:	<i>Bothell</i> , Ronald C. Reed; <i>Kirkland</i> , David T. Pitkethly; <i>Longview</i> , Clifford J. Schostal; <i>Renton</i> , Wallace H. J. Chang; <i>Seattle</i> , Gregory J. Raugi; <i>Spokane</i> , Charles L. Dorsey
West Germany:	Frederick V. Coville
West Virginia:	<i>Wheeling</i> , David P. Hill
Wisconsin:	<i>Milwaukee</i> , Jack L. Teasley
Wyoming:	<i>Sheridan</i> , James L. Scott; <i>Jackson</i> , John A. Feagin

Financial Information



Fees and Expenses

Tuition. The following table represents an estimate of a student's necessary expenses in the School of Medicine. The total of these figures suggests a basic minimum budget of approximately \$17,000. These are estimated figures only and are based on a survey of enrolled students. Tuition and fees are subject to change without notice. Allowances for recreation, travel, clothing, and other miscellaneous items must be added to this estimate with allowances for individual needs and tastes.

Tuition:	\$12,300
Accident and Sickness Insurance (subject to change)	225.00
Laboratory Fee (includes microscope rental, first year only)*	175.00
Annual Cost of Books: first year	538.00
Annual Cost of Books: second year	410.00
Annual Cost of Books: third and fourth year	180.00
Lodging	2,650.00
Board (University Dining Halls): first and second year	2,300.00
Board (University Dining Halls): third and fourth year	1,900.00
Student Health Service+	297.50
Student Government (Davison Society)+	25.00
Motor Vehicle Registration	50.00

*Sphygmomanometer, ophthalmoscope, otoscope, and other equipment required of each student must conform to rigid standards.

+Mandatory fee. For details, please refer to Student Health Service.

Tuition and fees are payable on a semester basis and all students are required to pay full tuition for four years as a requirement for graduation. For the freshman year one-half of the annual tuition and fees is billed in July and the other one-half in December. Students who must repeat 60 percent or more of the required first year courses will pay full tuition while prorated tuition will be paid by those repeating less than 60 percent of those courses. Second year students are billed at the rate of one-seventh of the annual tuition and fees for the Introduction to Clinical Diagnosis and each eight-week rotation and one-fourteenth of the annual tuition and fees for each four-week rotation. Juniors and seniors are billed in accordance with the number of elective credits for which they are registered. The cost per credit equals the annual tuition divided by the number of credits required per year.

Payment of Accounts for Fall and Spring. Monthly invoices for tuition, fees, and other charges will be sent by the Bursar's office and are payable upon receipt but no later than the late payment date. As a part of the agreement of admission to Duke University a student is required to pay all invoices as presented. No deferred payment plans are available. If full payment is not received by the late payment date, a late payment charge as described below will be assessed on the next invoice and certain restrictions as stated below will be applied. Failure to receive an invoice does not warrant exemption from the payment of tuition and fees nor from the penalties and restrictions. Nonregistered students will be required to make payment at the time of registration for tuition and fees and any past due balance on the account.

Late Payment Charge. If the "Total Amount Due" on an invoice is not received by the late payment date, the next invoice will reflect a penalty charge of 1¼ percent per month assessed on the past due balance regardless of the number of days past due. The "Past Due Balance" is defined as the previous balance less any payments and credits received on or before the late payment date and also any student loan memo credits related to the previous balance which appear on the invoice. The amount of the 1¼ percent penalty charge will be the same regardless of the number of days payment is received after the late payment date.

Restrictions. An individual will be in default of this agreement if the total amount due on the student invoice is not paid in full by the invoice late payment date. An individual who is in default will not be allowed to register for classes, receive a transcript of academic records, have academic credits certified, be granted a leave of absence or receive a diploma at graduation. In addition, an individual in default may be subject to withdrawal from school.

No credit will be given for any term in which the tuition has not been paid, whether the work has been at Duke or elsewhere. It is not advisable for students to attempt outside work to defray their expenses during the academic year. Spouses of medical students desiring employment may secure information from the Duke University Personnel Office.

Fall and Spring Refunds. Tuition and fees refunds are governed by the following policy:

1. In the event of death a full tuition and fees refund will be granted.
2. In all other cases of withdrawal or leaves of absence, students or their parents may elect to have tuition refunded or carried forward as a credit for later study according to the following schedule:
 - a. withdrawal before the beginning of classes—full refund;
 - b. withdrawal during the first or second week—80 percent;
 - c. withdrawal during the third through fifth week—60 percent;
 - d. withdrawal during the sixth week—20 percent;
 - e. withdrawal after the sixth week—no refund;
 - f. tuition charges paid from grants or loans will be restored to those funds on the same pro rata basis and will not be refunded or carried forward.
3. In the case of changing category from full-time to part-time, dropping special fee courses (music, art, golf, etc.), or dropping audit courses, a full refund will be granted during the drop/add period. Subsequent to the drop/add period changes of category will not be allowed. Students may, however, withdraw from courses after the drop/add period with no refund or add new courses if the proper tuition is paid.

Transcripts. Requests for transcripts of academic records should be directed to the Office of the Medical Center Registrar. A minimum fee of two dollars, payable in advance, is charged for each copy.

Living Accommodations

Housing Costs. For the 1987-88 academic year, rental rates for the first-year medical student were \$2,455 for the Town House apartments and \$2,158 for the Modular Homes. Utility charges are not included in these rates.

Rental rates in Central Campus Apartments ranged from \$2,465 to \$3,805 for single first-year medical students. Utility charges are included in the Central Campus Apartment rates. These rates are per person per academic year.

Rental rates are expected to increase for the 1988-89 academic year. A deposit is required with all applications. The deposit will not be refunded if cancellation is received after an assignment is made.

Refunds of rent will be calculated in accordance with the procedures published by the Department of Housing Management.

Food and Other Expenses. Duke University Food Services and Duke University Store operations are located on campus to service the needs of the Duke community. For the convenience of students, the University Identification card, called The Duke Card, can be used to access prepaid accounts and make purchases in these facilities.

There are two kinds of accounts: the dining account, which can be used for food purchases only, and the flexible spending account, which can be used to purchase not only food, but any items sold by Duke stores, such as books, supplies, laundry services, health and beauty aids, and more. These campus retail operations also accept cash.

For more information about establishing an account, contact the Auxiliary Services Contract Office, 024 Union West, Duke University, Durham, North Carolina 27706 919/684-5800.

Motor Vehicle Registration

Each motor vehicle operated on Duke University campuses by students enrolled in the School of Medicine must be registered at the Medical Center Traffic Office, PRT Level, Parking Deck II, within five days after operation on the campus begins, and thereafter must display the proper registration decal.

All students must pay an annual fee of \$50 for each four-wheeled motor vehicle and \$25 for each motorbike or motor scooter registered. Bicycles are registered free of charge at the Public Safety Department, 2010 Campus Drive.

To register a vehicle, the student must present a valid state registration for each vehicle registered and a valid state operator's license.

Parking, traffic, and safety regulations will be given each student at the time of registration of the vehicle(s). Students are expected to abide by these regulations.

Merit Scholarships for Medical Students

The School of Medicine offers the following scholarships, ranging from \$1,500 to full four-year tuition, based solely on academic excellence:

Barham Endowed Merit Scholarship, established November, 1984, by gift from Mr. and Mrs. Joseph Barham, Oak Ridge, Louisiana.

Edward H. Benenson Merit Scholarship, established October, 1984, by gift from Mr. Edward H. Benenson, New York.

Clinical Faculty Merit Scholarship, established November, 1985, by clinical faculty.

Family Dollar Scholarship, established November, 1984, by gift from Mr. Leon Levine, Chairman of the Board, Family Dollar Stores, Inc., Charlotte, North Carolina; for minority students.

Dr. William Redin Kirk Memorial Trust for North Carolinians, established March, 1984, by bequest of Mr. Frederick H. Pierce, Owensboro, Kentucky.

Mary W. and Foster G. McGaw Scholarship, established June, 1986, by bequest from Foster G. McGaw.

Medical Faculty Wives Merit Scholarship, established August, 1985, by medical faculty wives.

Dr. Kenneth L. Pickrell Scholarship, established February, 1984, by gift from the Department of Surgery, Duke University Medical Center.

Department of Psychiatry Merit Scholarship, established November, 1985, by the Department of Psychiatry, Duke University Medical Center.

Department of Radiology Merit Scholarship, established September, 1985, by the Department of Radiology, Duke University Medical Center.

School of Medicine Merit Scholarship Fund, established 1984 by gifts from medical alumni, students, and American Medical Association-Education and Research Foundation.

The Merit Scholarship Selection Committee makes final selections from nominees chosen by the Medical School Admissions Office. Candidates may be notified as early as January or February of final selection and alternate status. Annual renewal is contingent upon satisfactory academic progress.

Financial need is not a criteria for selection, however, applicants who feel their financial need is greater than the merit award may apply for financial aid.

The Dean's Tuition Scholarships. Seven Dean's Tuition Scholarships in the amount of current tuition are given to academically excellent freshmen minority students each year. Preference is given to residents of North Carolina. Selection is made by the Dean based on recommendations from the Medical School Admissions Office. Annual renewal is contingent upon satisfactory academic progress.



Medical Student Research Scholarships

Several groups now sponsor medical student research scholarships. Some have delegated the responsibility to the medical school to select participants in the program, others have their own independent selection processes. Students selected for scholarships are eligible to receive up to thirty-six basic science credits for the experience. A full twelve-month research experience is required to qualify for all thirty-six credits. Selection for the following awards is made by the Student Research Scholarship Committee.

Stanley J. Sarnoff Society of Fellows for Research in Cardiovascular Sciences. Ten students are chosen nationally for a full twelve-month research experience in the cardiovascular area, away from their parent medical school. Duke has one position in this program. The recipient is awarded \$12,000 for the twelve-month research experience. An additional \$1,500 is available for travel to various laboratories during the selection process. The program is in its ninth year and there is a great deal of esprit de corps within the "Sarnoff Society of Cardiovascular Fellows". Dr. Sarnoff hosts an annual meeting in Bethesda, Maryland, in which the ten fellows engaged in research during that year present their work, fellows who have completed their research year talk about their developing career plans, and newly selected fellows learn about possible research opportunities.

Eugene A. Stead Student Research Scholarship Program. This program is sponsored by the Duke Department of Medicine in honor of Eugene A. Stead, M.D., Departmental Chairman from 1947 to 1967. Three students are selected each year to receive an \$8,000 award for a full twelve-month research experience. They work with a preceptor at Duke who either has solely a basic science appointment or a primary appointment in the Department of Medicine with a secondary basic science appointment. The scholarship recipients meet with Dr. Stead to informally discuss their research activities. They are also expected to present their work at the AOA symposium in April. Two of the scholarships in the Stead program for 1988-89 are named for the patients of Duke physicians who have provided endowments: Jay D. and Lorraine Nicewonder (Dr. James Clapp), Robert T. and Virginia McDaniel (Dr. Andrew Wallace). There are no additional criteria for the Nicewonder scholarship. The McDaniel scholarship is intended to support basic cardiovascular research. Preference will be given to individuals who wish to focus on the pathogenesis, prevention or treatment of atherosclerotic cardiovascular disease. Fundamental research in atherogenesis, thrombosis, lipid metabolism, hypertension or exercise physiology would be examples of potential areas in keeping with the desires of the donor.

Duke Eye Center Research Scholarship. An opportunity will be offered to one third year student to work on eye related research with a preceptor with either (a) a joint appointment in ophthalmology and a basic science department or (b) an appointment only in a basic science department. The award will be for \$5,000 for one year of research. Students expressing interest should contact Dr. Gordon K. Klintworth at 684-3550.

International Health Student Fellowship Program. An opportunity will be offered for one or two third-year students to undertake an epidemiologic research project in Costa Rica. Supervision will be provided by: (1) one of the professional staff at the Institute for Health Studies (INISA) within the University of Costa Rica; (2) Dr. William Wilkinson, Director of the Biometry and Medical Informatics Study Program; and (3) Dr. David Durack, Director of the Division of Infectious Diseases and International Health. Costa Rica is a small, politically stable Central American country with good health care facilities. Students interested in this opportunity should contact Dr. David Durack 684-2660.

INISA is an established research institute with a strong record of publications in epidemiology, public health and health care delivery. Various research projects will be available in the fields of health care delivery, child health and development, or microbiology. At the end of the project, a written report of thirty to sixty double-spaced typewritten pages will be required, to document progress and achievements while in Costa Rica.

Duke University School of Medicine will provide one round-trip airfare, plus a modest subsistence allowance which will cover most local living expenses. Housing will not be provided, but assistance will be available from members of the INISA faculty and staff to identify and rent a room with a local, Spanish speaking family. Ability to converse in Spanish will be considered highly desirable. Students who have no Spanish but wish to be competitive for this unique opportunity should consider taking a basic Spanish course to improve their chances of selection.

The following scholarship programs have independent selection procedures: Howard Hughes Medical Institute-NIH Student Research Scholar Program, Fight for Sight Scientific Awards Program, Arthritis Medical Student Research Award, and Rockefeller University Human Nutrition Research Scholarship Program.

Financial Aid

The Duke University School of Medicine makes financial assistance available to accepted students who, due to economic circumstances, could not otherwise attend the University. The school recognizes, however the responsibility of the individual and the family to provide funds to achieve the objective of a medical education. Thus, the school does not consider that parents have discharged the full financial obligation for the continuing education of their sons or daughters upon the latter's completion of the undergraduate degree.

Financial assistance is available in a combined form of grants and loans, and all awards are made on the basis of demonstrated need.

Financial Assistance to Incoming Freshmen. A financial aid application packet is routinely mailed by early January to each applicant who has been scheduled for a medical school interview. This mailing is without regard to whether the applicant expressed an interest in assistance on the application for admission. The economic circumstances of the applicant have no bearing on whether the applicant is accepted into the medical school.

The applicant requesting financial aid is expected to work during the summer preceding entrance into medical school and to save part of these earnings to defray a portion of the first-year expenses.

The applicant's need must be established before an award can be made. The Office of Financial Aid, therefore, requires the Duke University Medical Center application for financial aid and computations from the GAPS FAS form. Copies of federal income tax returns with supplemental schedules and a financial aid transcript are also required as part of the financial aid application.

An official aid award notice is sent to the accepted applicant within a few days after receipt of the required forms. Awards are conditional until all required documents are received.

The present financial aid package, which is subject to change, for qualified North Carolinians (those who meet state residency law prior to matriculation) is based on a tuition grant up to \$10,000. Financial need in excess of \$10,000 must come next from a \$5,000 guaranteed student loan, and need in excess of \$5,000 comes from one-half school grant and one-half guaranteed student loan up to \$2,500, then Duke loan.

The present financial aid package, which is subject to change, for qualified students from outside North Carolina is based on a \$5,000 guaranteed student loan. Financial need in excess of \$5,000 comes from one-half school grant and one-half from guaranteed student loan up to \$2,500, then Duke loan.

Financial Assistance to Upperclassmen. Annual reapplication is required of all need based aid recipients. Upperclassmen seeking financial assistance for the first time may consult with the Administrator of Financial Aid.

Duke University Medical Center Endowed Funds.

- Charles W. Banner Loan Fund, established in 1953 by a gift from Mrs. Edward B. Benjamin.
- Germain Bernard Scholarship, established in 1959 by the B. C. Remedy Company.
- Thomas C. Bost Scholarship, established in 1965 by a gift from Dr. Thomas C. Bost, supplemented by subsequent gifts.
- Elizabeth Burgess Bressler Memorial Scholarship Fund, established in 1983 by her children: Garrett S. Bressler, M.D.; Robert B. Bressler, M.D.; Barbara B. Marques; Peter B. Bressler, M.D.
- James L. Clark Memorial Scholarship, established in 1965 by a gift from Mr. and Mrs. Marvin D. Clark and supplemented by gifts from other donors.
- C. T. Council Scholarship, established in 1959 by the B. C. Remedy Company.
- John H. Dorminy Scholarship, established in 1980 by gift from John H. Dorminy, Jr.
- Herbert T. Dukes, M.D. Memorial Loan Fund, established in 1983 by his classmates and friends.
- Eagles-Andrews Memorial Scholarship, established in 1982 by a gift from Dr. and Mrs. William M. Eagles.
- William F. Franck Memorial Scholarship, established in 1958 by gift from William F. Franck, Jr. '39, and supplemented by additional gifts.
- Joseph W. Greer Scholarship, established in 1980 by gift from Mr. and Mrs. Joseph H. Greer.
- Warren W. Hobbie Fund, established in 1980 by trustees of the Warren W. Hobbie Charitable Trust.
- George Lee Hundley and Rebecca Barnhill Hundley Fund, established in 1980 by gift from George Lee and Rebecca Barnhill Hundley.
- H. B. and Adelaide F. Ingle Medical Scholarship, established in 1976 by gift from Mr. and Mrs. Harry B. Ingle.
- B. Everett Jordan Scholarship, established in 1974 by the late Senator B. Everett Jordan and his widow, Katherine Jordan.
- Thomas D. Kinney, M.D. Memorial Scholarship, established in 1980 by gifts from his widow, Dr. Eleanor R. Kinney, and their children: Thomas R. Kinney, M.D.; Eleanor D. Kinney, J.D.; Hannah C. Kinney, M.D.; and Janet S. Kinney, M.D.
- Dr. John Haden Lane Memorial Scholarship, established in 1968 by gift from Edward H. Lane Foundation.
- E. C. Langston Medical Scholarship, established in 1979 by bequest of Mrs. Denzil L. Mosteller.
- Paul E. Leviton Medical Scholarship, established in 1981 from the estate of Paul E. Leviton.
- James Cecil McGehee Memorial Medical Scholarship, established in 1975 by gift from C. G. McGehee, Jr.
- Medical Alumni Scholarship, established in 1974 by Duke Medical Alumni.
- Medical Class of 1950, established in 1980 by gifts from graduates of 1950.
- Medical Class of 1981 and AESCULAPIAN/80 Staff, established in 1980.
- Medical School Faculty Wives Scholarship, established in 1968 by a gift from the Medical School faculty wives whose source of funds is proceeds from the Nearly New Shoppe.
- John F. Ott Endowment Fund, established in 1984 by bequest of John F. Ott, M.D., 1943.
- Physical Medicine Scholarship, established in 1963 by gift from Central Carolina Convalescent Hospital, Inc., Greensboro, North Carolina.
- Radiological Science Medical Student Loan Fund, established in 1980 by the Department of Radiology.
- Senior Class Gift, established by graduates of classes of 1977 and 1978.

Melvin D. and Judith N. Small Medical School Scholarship Fund was established in 1976 by gift from Dr. Melvin D. and Mrs. Judith N. Small.

Sigmund Sternberger Endowment Fund, established in 1978 by gift from the Sigmund Sternberger Foundation, Inc., Greensboro, North Carolina.

William E. Stevens, Jr. Scholarship, established in 1983 by the Broyhill Foundation, Lenoir, North Carolina.

B. W. Stiles Scholarship, established in 1981 by gift from the Mary Duke Biddle Foundation.

Francis and Elizabeth Swett Scholarship, established in 1966 by gift from the late Dr. and Mrs. Swett.

Dr. Hillory M. Wilder Memorial Scholarship, established in 1962 by bequest from Celeste Wilder Blake and Kenneth M. Blake.

Sue Eggleston Woodward Memorial Scholarship, established in 1966 by gifts from parents, relatives, and friends.

Vivian Zirkle Memorial Scholarship, established in 1981 by gift from Drs. Lewis and Sara Zirkle.

Other Medical School Scholarships. Mary Duke Biddle Foundation Scholarships, Dr. E. Eugene Owen Scholarship, Duke University School of Medicine Scholarships, and State of North Carolina (tuition remission up to \$2,000).

Federal Scholarships. Armed Forces (Army, Navy, and Air Force) Scholarship programs may be available for accepted or enrolled students. The recipient receives full tuition, fees, and a monthly stipend in return for a commitment of service as a physician for each year of funding. The special application is made directly to the program in which the student is interested.

First-Year Scholarships for Students of Exceptional Financial Need. This federally funded program pays tuition, fees, and living expense. The student must have zero family resources as measured by a nationally recognized needs analysis. Recipients are selected by the school using federal criteria. For 1987-88 there were two scholarships.

Financial Aid for Disadvantaged Health Professions Students (FADHPS). Recipients for this federally funded grant program are selected by the school on the basis of federal criteria. The student must have zero family resources as measured by a nationally recognized needs analysis.

North Carolina Board of Governors Medical Scholarships. Board of Governors Medical Scholarships (BGMS) are awarded annually to twenty first-year medical school candidates who have been accepted for admission at one of the four medical schools in North Carolina. BGMS recipients are selected from among candidates of all races who are financially disadvantaged state residents and who have expressed an interest in practicing medicine in the State of North Carolina. The awards provide a yearly stipend of \$5,000 plus tuition and mandatory fees and may be renewed for four years. Information about the scholarship may be obtained from the financial aid office.

Loans

University loans are available under the specific restrictions of the loan funds and are awarded on the basis of financial need. Some of them are: W. K. Kellogg Foundation Loan Fund, Seaborn L. Hardman Loan Fund, Medical Freshman Tuition Loan, Scott Loan Fund, Charles W. Banner Loan Fund, Robert Wood Johnson Foundation Student Aid Program, National Direct Student Loans, Radiological Science Medical Student Loan Fund, and U. S. Health Professions Student Loans.

The Francis and Elizabeth Swett Loan Fund is an emergency loan available in small amounts to any medical student on a no-interest basis for a short period of time.

Loans from Outside the University

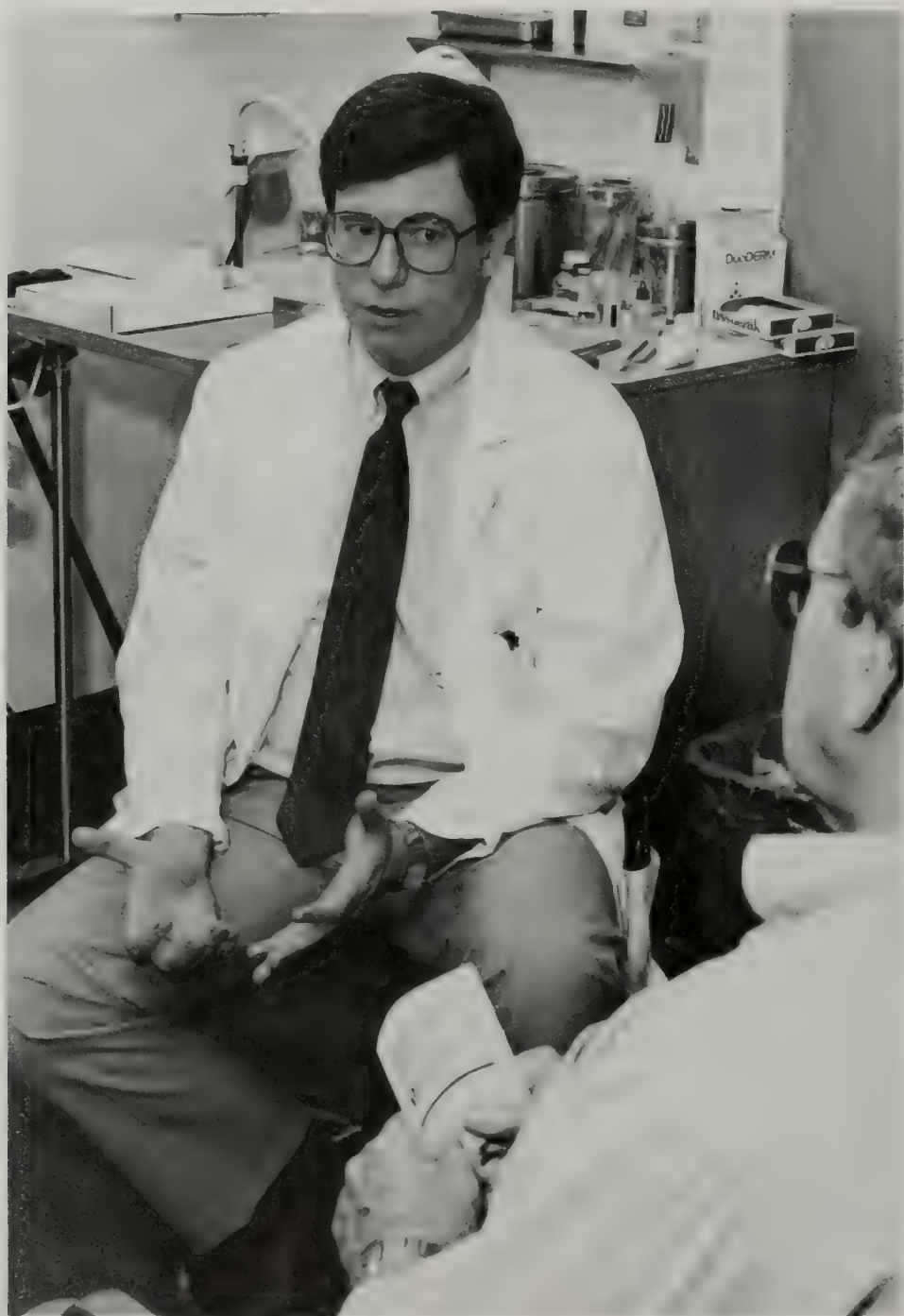
North Carolina Student Loan Program for Health, Science and Mathematics. These loans provide financial assistance to North Carolina residents who demonstrate need as determined by the board. Loans are available for study in the medical fields, mathematics, and science programs that lead to a degree. The applicant must be a domiciliary of North Carolina and accepted as a full-time student in an accredited associate, baccalaureate, master's, or doctoral program leading to a degree. Loan recipients in some professional or allied health programs may cancel their loans through approved service in shortage areas, public institutions, or private practice. Medical students may receive up to \$7,500 per year for each of the four years; master's degree students are eligible for two loans of up to \$5,000 each; bachelor's degree students are eligible for three loans of up to \$4,000 each. For application forms and more information write: Executive Secretary, Board for Need-Based Student Loans, 116 West Jones Street, Raleigh, North Carolina 27605, or telephone 919/733-2164.

Health Education Assistance Loans. These loans are available to accepted or enrolled students. There is an annual maximum, and interest, which is higher than the rate for need-based loans, is not subsidized during enrollment. The special application and more information is available in the financial aid office.

Guaranteed Student Loans (GSL). The GSL is available to eligible students from many home-town banks and/or state agencies. The annual maximum for medical students is \$7,500 with an aggregate maximum of \$54,750. The 8 percent interest is federally subsidized until repayment begins six months after graduation. A 5 percent loan origination fee on the amount of the loan is required.

Additional information, including a financial aid brochure and approved student budgets, may be obtained by writing Administrator of Financial Aid, Box 3005, Duke University Medical Center, Durham, North Carolina 27710.

Courses of Instruction



Anatomy

James B. Duke Professor: J. David Robertson, M.D. (Harvard, 1945), Ph.D. (Massachusetts Inst. of Tech., 1952), *Chairman*. R. J. Reynolds Industries Professor in Medical Education Montrose J. Moses, Ph.D. (Columbia, 1949), *Vice-Chairman*.

Professors: Matthew Cartmill, Ph.D. (Chicago, 1970); Sheila J. Counce, Ph.D. (Edinburgh, 1954); Harold P. Erickson, Ph.D. (Johns Hopkins, 1969); William C. Hall, Ph.D. (Duke, 1967); William L. Hylander, D.D.S. (Illinois, 1963), Ph.D. (Chicago, 1972); Richard F. Kay, Ph.D. (Yale, 1973); R. Bruce Nicklas, Ph.D. (Columbia, 1958); Michael K. Reedy, M.D. (Washington, 1962); James B. Duke Professor Elwyn Simons, Ph.D. (Princeton, 1956; Oxford, 1959).

Associate Professors: Nell B. Cant, Ph.D. (Michigan, 1973); Joseph M. Corless, M.D., Ph.D. (Duke, 1972); Eric L. Effmann, M.D. (Indiana, 1967); William Longley, Ph.D. (London, 1963); Ross D. MacPhee, Ph.D. (Alberta, 1977); Thomas J. McIntosh, Ph.D. (Carnegie-Mellon, 1973); E. Lee Tyrey, Ph.D. (Illinois, 1969).

Assistant Professors: Frank H. Bassett III, M.D. (Louisville, 1957); M. Joseph Costello, Ph.D. (Duke, 1971); Barbara J. Crain, M.D., Ph.D. (Duke, 1978); David Fitzpatrick, Ph.D. (Duke, 1982); William E. Garrett, Jr., M.D., Ph.D. (Duke, 1976); Emma R. Jakoi, Ph.D. (Duke, 1973); Michael K. Lamvik, Ph.D. (Chicago, 1976); Chia-Sheng Lin, Ph.D. (Vanderbilt, 1976); Patricia M. Saling, Ph.D. (Pennsylvania, 1979); Frederick H. Schachat, Ph.D. (Stanford, 1974); Kathleen K. Smith, Ph.D. (Harvard, 1980).

Associate Medical Research Professors: Jane S. Richardson, M.A. (Harvard, 1966); Kenneth A. Taylor, Ph.D. (Berkeley, 1975).

Assistant Medical Research Professors: Hie Ping Beall, Ph.D. (Tulane, 1967); Denis Raczkowski, Ph.D. (Duke, 1978); Laura Schweitzer, Ph.D. (Washington, 1979).

Adjunct Assistant Professor: David A. Kopf, Ph.D. (Chicago, 1980).

Lecturer: Irving T. Diamond, Ph.D. (Chicago, 1953).

Research Associates: Harry C. Beall, Ph.D.; Margaret M. Briggs, Ph.D.; David A. Burney, Ph.D.; Leonidas S. Cordova, M.S.; Gillian Einstein, Ph.D.; Mary K. Izard, Ph.D.; Val Lightner, M.D.; Alan D. Magid, Ph.D.; Manoj Misra, Ph.D.; Timothy O'Brien, Ph.D.; Pascal Picq, Docteur de 3eme Cycle; Mary C. Reedy, M.S.; Brett R. Schofield, Ph.D.

Associate in Research: J. Z. Young, B.A.

Emeriti: Kenneth L. Duke, Ph.D. (Duke, 1940); John W. Everett, Ph.D. (Yale, 1932).

Required Courses

During Term 1, first-year students are required to take Gross Anatomy (ANA-200), Microanatomy (ANA-201), and Neuroanatomy (ANA-202). All instruction is designed to be informal and individualized. The general principles and functional viewpoint of living anatomy are emphasized and, whenever possible, fresh tissues and living cells are used.

ANA-200. Gross Anatomy. Students dissect the entire human body except the brain. Formal classroom lectures relate structures of the human body to their developmental and phylogenetic antecedents and the clinical significance of anatomical facts. Informal lectures are presented to small groups. Filmed lectures and prosections are available to students for laboratory and library study.

ANA-201. Microanatomy. The structural organization of different tissues and organs, as determined by light and electron microscopy, is covered in lecture. Other biochemical and biophysical studies are presented to relate structure to function, especially at the cellular level. The laboratory provides practical experience with light microscopy studies and analyzing an extensive collection of prepared slides.

ANA-202. Basic Neurobiology. An integrated interdepartmental course designed for the first year medical students and other professional students who need a core course on the morphology and functions of the mammalian nervous system. Lectures, laboratory demonstrations, clinical conferences, and lecture conferences during the month of January only. Prerequisites: ANA 200, ANA 201, BCH 200, and PHS 200 or equivalents.

Electives

ANA-214(B). Anatomy of the Head and Neck. This course is designed to be a review of the head and neck, emphasizing its phylogenetic and ontogenetic development along with clinically important features of the anatomy of this region. Weight: 2. *Smith and Staff*

ANA-221(B). Anatomy of the Trunk. Emphasis will be on the anatomy of the thoracic, abdominal, and pelvic organs, including relationships, blood supply and innervations, and, where practical, developmental and microscopic anatomy. The dissections will be supplemented with audiovisual presentations and discussions and with such prosecutions as are available. Weight: 2. *Duke*

ANA-224(B). Tutorial in Gross Anatomy. A detailed review of selected regions of the human body in the context of the core gross anatomy sequence. Student will plan, with staff, prosecutions, special presentations, etc. Students will elect to study one or more selected region in consultation with the staff. Weight: 1-5. *Staff*

ANA-225(B). Neurobiology of Sensory Systems. This course will provide a detailed examination of the morphology, biochemistry, and electrophysiology of sensory systems, with special emphasis on the primary receptor transduction mechanisms, with central nervous system projections as appropriate. Weight: 3. *Corless and Simon*

ANA-231(B). Anatomy of Back and Extremities. Complete dissection of back and extremities, including pectoral and pelvic girdles. Visual aids will be used extensively. Course planned for orthopaedics, general practice, or neurosurgery. Weight: 3. *Bassett and staff*

ANA-259(B). Molecular Biology I. Protein and Membrane Structure/Function. Detailed concepts of the structure and function of proteins as enzymes and as structural elements of cellular substructures, including: protein primary structure and its determination, patterns of protein folding, mechanisms of enzyme catalysis and regulation, function and formation of multimeric protein assemblies, proteins and other constituents of biological membranes. Weight: 3. *Erickson, D. Richardson, Bell, Rajagopalan, and J. Richardson.*

ANA-266(B). Comparative Neurobiology. The evolution and functional organization of the vertebrate brain. A study of the original papers of the great pioneers in evolution, neuropsychology, and neuroanatomy. Weight: 3. *Hall and Diamond*

ANA-269(B). Advanced Cell Biology. Structural and functional organization of cells and their components with emphasis on current research problems and prospects. Weight: 3. *McIntosh and staff*

ANA-286(B). Electron Microscopy and Related Techniques. Lectures and laboratories on methods of ultrastructure research. Fundamentals of optics; the light micro-

scope, phase, polarizing, and interference microscopy. Basics of electron microscopy, staining, sectioning, and replication techniques. Optical and computer image processing. Introduction to X-ray diffraction theory and apparatus in biological structure determination. Offered in alternate years or on demand. Weight: 4. *Longley*

ANA-320(B). Cell Differentiation in Development and Disease. The primary objective is to present important concepts of organization and retrieval of genetic information as they relate to storage, replication, transcription, processing, and translation of genetic information. Chromosome inactivation, gene amplification, and the impact of nucleocytoplasmic interactions on the regulation of differentiation will be considered. Transition phases of cell cycle will be discussed in regard to normal and oncogene function. Conferences will be devoted to specific examples dealing with critical aspects of differentiation involved in development of normal and disease states. The course is designed as an introduction to Hormone and Tissue Interactions in Differentiation and Disease. Weight: 2-5. *Counce and McCarty*

ANA-321(B). Hormone and Tissue Interactions in Differentiation and Disease. Hormones and other biochemical signals involved in the regulation of the differentiated state including amino acids, polypeptide and steroid hormone response in insects, snails, and higher vertebrates will be discussed in terms of the new biotechnology used to elucidate mechanisms of information transfer and gene control at the level of the chromatin. Cell-cell, cell-matrix, and hormonal interactions will be considered as control elements in development and differentiation. Interactions involving the cell surface, the basal lamina, and extracellular matrix will be discussed in terms of organization of cell populations in gastrulation and neurulation and in the differentiation of limb bud/pancreas/ lymphocyte/and neural tissue. Conferences will include hormone control of sex differentiation, ectopic hormone biosynthesis, and endocrine related diseases. The course is designed as an extension of the course Differentiation in Development and Disease. Weight: 2. *Counce, McCarty, Sr., Kaufman, and K. McCarty, Jr.*

ANA-340(B). Tutorial in Advanced Anatomy. Selected topics will be chosen for intensive reading and discussion. Topics may be chosen related to basic problems of cytology, growth and development, biophysics, endocrinological control, neuroanatomy, physiological differentiation and evolutionary origins of functional microsystems. Weight: 1-3 per term. *Staff*

ANA-354(B). Research Techniques in Anatomy. A preceptorial course in various research methods in anatomy including electron microscopy. An interested student might engage in research in physical anthropology, molecular and cell biology, developmental biology, fetal physiology, or stereotactic approaches to neuroendocrinology and neuroanatomy. Recent advances in methodology are stressed. Approval of the student by the faculty is required. Weight: 4-8. *Staff*

ANA-411(B). Molecular and Cellular Bases of Development and Differentiation. Emphasis is placed on the biochemistry of the cell surface as the basis of cell recognition, control of cell cycle, and overall tissue organization. An analysis of protein nucleic acid interactions in chromosome structure and function is considered in light of newer concepts of transcriptional and translational control. Studies also include nuclear cytoplasmic interactions as well as hormone induction of differentiation and development. The course is designed to study cellular differentiation and has been organized on a multidisciplinary level. The course is part of the lecture series of the Molecular and Cellular Basis of Differentiation Study Program, MCD 201B. Weight: 3. *Counce, McCarty, Kaufman, and Padilla*

ANA-414(B). The Human Embryo. The first eight weeks of development are considered in detail, including fertilization, implantation, formation, and function of embryonic membranes and placenta, and establishment of major organ systems. Emphasis

is placed on distinctive features of human embryogenesis, and on causes, identification, and treatment of congenital defects. Weight: 2. *Counce and Effmann*

ANA-418(B). Reproductive Biology. An indepth study of male and female reproductive processes including hypothalamic, pituitary, and gonadal control mechanisms as well as the physiology of pregnancy and parturition. Lectures by guest clinical faculty will emphasize the interface between basic science and clinical aspects. The lecture material in each section of the course is followed by seminar presentations which will contribute to ANA/PHS-424, a corequisite for the course. Also listed as PHS-418(B). Weight: 2. *Tyrey, Anderson, and Schomberg*

ANA-424(B). Reproductive Biology. Selected topics in reproductive biology will be chosen for indepth reading and analysis in the seminar format. The seminar is to be taken as a corequisite with ANA/PHS-418(B). Also listed as PHS-424(B). Weight: 1. *Tyrey, Anderson, and Schomberg*

Anesthesiology

Professor: W. David Watkins, M.D. (Colorado, 1975), Ph.D. (Michigan, 1971), *Chairman*.

Professors: Peter B. Bennett, Ph.D., D.Sc. (Southampton, England, 1964); Enrico M. Camporesi, M.D. (University of Milan, Italy, 1970); Kenneth D. Hall, M.D. (Duke, 1953); Joannes H. Karis, M.D. (State Univ. of Utrecht, Holland, 1952); William J. Murray, Ph.D. (Wisconsin, 1955), M.D. (North Carolina at Chapel Hill, 1962); Lloyd F. Redick, M.D. (Ohio State, 1958); Joseph G. Reves, M.D. (Med. Coll. of South Carolina, 1969); Bruno J. Urban, M.D. (Albertus Magnus, Germany, 1960); Vartan Vartanian, M.D. (Clug Univ. Med. School, Rumania, 1951); Stanley W. Weitzner, M.D. (New York Coll. of Med., 1953).

Associate Professors: Edmond C. Bloch, M.B., Ch.B. (Univ. of Cape Town, South Africa, 1946); Elisabeth J. Fox, M.B., B.S. (London Univ., 1955); Philip D. Lumb, M.B., B.S. (Univ. of London, 1974); Robert N. Sladen, M.D., Ch.B. (Univ. of Cape Town, South Africa, 1970), M.R.C.P. (Royal Postgrad. Med. Sch., 1973).

Assistant Professors: Fiona M. Clements, M.D. (Duke, 1975); Norbertus P. de Bruijn, M.D. (University of Groningen, The Netherlands, 1976); Brian Ginsberg, M.B., B.Ch. (Univ. of Witwatersrand, South Africa, 1975); Michael S. Gorbach, M.D. (Maryland, 1979); William J. Greeley, M.D. (Texas at Houston, 1976); David H. Hardman, M.D. (Minnesota, 1981); Robert W. Kalayjian, M.D. (California at San Francisco, 1971); John B. Leslie, M.D. (Duke, 1976); Nabil S. Malek, M.B., B.Ch. (Ein Shams Univ., Cairo, Egypt, 1961), F.F.A.R.C.S. (Royal College of Surgeons, England, 1971); Mohammad Maroof, M.B., B.S. (Liaquat Med. Coll., Pakistan, 1964), F.F.A.R.C.S. (Royal College of Surgeons, England, 1972); R. William McIntyre, M.D. (Univ. of British Columbia, 1970); Andrew Meyer, M.D. (New York, Downstate, 1969); Richard E. Moon, M.D., C.M. (McGill, 1973), M.Sc. (Univ. of Toronto, 1979); Rachel A. Nunn, M.D. (Bowman Gray, 1982); Timothy J. Quill, M.D. (Ohio, 1980); Ziaur Rahman, M.B. (Prince of Wales Med. Coll., India, 1968); Roy D. Russell, M.D. (New York Med. Coll., 1977); Dianne L. Scott, M.D. (North Carolina at Chapel Hill, 1978); Edward Scruggs, M.D. (South Alabama, 1983); Jennifer E. Taylor, M.D. (Maryland, 1978); William A. Wilson, M.D. (Wayne State, 1982).

Assistant Medical Research Professors: Wayne A. Gerth, Ph.D. (California at San Diego, 1979); Fritz F. Klein, Ph.D. (Duke, 1973); Pedro Labarca, Ph.D. (Brandeis, 1980); Sidney A. Simon, (Northwestern, 1973); Ying-Fu Su, Ph.D. (Colorado, 1978); Richard Vann, Ph.D. (Duke, 1976).

Clinical Professor: Kenneth Sugioka, M.D. (Washington Univ., 1949).

Associate Clinical Professor: Edward T. Thomas, M.B., B.S. (London, 1949), M.R.C.S., L.R.C.P. (England, 1948, F.F.A.R.C.S. (England, 1954).

Assistant Clinical Professor: John A. Jarrell, Jr., M.D. (Johns Hopkins, 1949).

Associates: Gregory Brusino, M.D. (New York at Buffalo, 1983); John Elliott, M.D. (Cincinnati, 1983); Patricia Estok, M.D. (Miami, 1983); Kevin Ossey, M.B., Ch.B. (University of Cape Town, South Africa, 1981); Stephen Parrillo, M.D. (Univ. of Bologna, Italy, 1982); Susan Gubert, M.D. (Med. Coll. of Georgia, 1980); Karen Sibert, M.D. (Baylor, 1982); Phillip Mitchell, M.B., Ch.B. (University of Cape Town, South Africa, 1980); Thomas E. Stanley, III, M.D. (Duke, 1981).

Adjunct Professor: Kwen Jen Chang, Ph.D. (New York at Buffalo, 1972).

Adjunct Associate Professor: Charles G. Lineberry, Ph.D. (Delaware, 1970).

Adjunct Assistant Professor: David M. Cocchetto, Ph.D. (Duke, 1983); John R. Plachetka, Pharm. D. (Illinois, 1977); Allen E. Cato, M.D. (Duke, 1969), Ph.D. (Duke, 1967).

Medical Research Associates: Joel S. Goldberg, M.D. (Duke, 1977); James R. Jacobs, Ph.D. (Alabama, 1987).

Visiting Associates: Marek R. Gabrielczyk, M.B., B.S. (The Medical College of St. Bartholomew's Hospital, 1978); Kevin Markham, M.B., B.S., F.F.A.R.C.S. (The London Hospital Medical College, 1980).

Emeriti: Merel H. Harmel, M.D. (Johns Hopkins, 1943).

Electives

ANE-240(C). Clinical Anesthesiology. This course (four weeks minimum) is designed to directly expose students to the clinical practice of anesthesiology. Through-

out the rotation each student is assigned on a weekly basis to an individual resident or attending physician who will supervise the student's active participation in the pre-, intra- and postoperative anesthetic care and management of patients. Opportunities exist for students to participate in the various subspecialty areas of anesthesiology including pediatric, obstetric, cardiac and neurosurgical anesthesia as well as the recovery room, ICU, and pain clinic. While initial assignments will be made prior to the first day of the rotation, there is flexibility with regard to students' particular areas of interest. The evaluation of patients preoperatively will be taught with emphasis placed upon formulating a plan of anesthetic management which is appropriate for the individual patient. The consequential impact of anesthetics and surgical procedures upon particular disease states will also be stressed. Students will review the clinical pharmacology of anesthetic and adjuvant drugs as well as apply the principles of pharmacology, physiology and anatomy to the clinical anesthetic management of patients. Didactic information regarding principles of airway management, including endotracheal intubation, will be presented and reinforced with application in the clinical setting. Participants will be exposed to basic methods of administering anesthetics and monitoring the depth of anesthesia through physiologic responses of the patient. Special anesthetic techniques such as spinal and lumbar epidural anesthesia and regional nerve blocks will be presented. Instruction in the appropriate techniques and complications of obtaining vascular access for administering drugs and monitoring hemodynamic status will be provided. In addition to this clinical work, students will be given the opportunity to attend various lectures including an introductory series (covering preoperative assessment, airway management and anesthesia equipment), grand rounds and resident lecture series, and various subspecialty conferences (cardiac, pediatrics). There will also be several case conferences at which time students will be expected to present clinical cases they were involved in for discussion. A series of core lecture topics will be provided which will be discussed with the student during the rotation. If time permits, basic cardiac life support instruction and certification will be offered. Weight: 4-8. *Watkins and staff*

ANE-241(C). SICU/Recovery. Four weeks may be spent in the SICU/Recovery Unit participating in the care of a wide variety of patients with critical surgical illnesses. The students will participate in morning and afternoon rounds with SICU attendings and residents, and will be offered lectures on aspects of critical care several times per week. Exposure to problems of management in the recovery room is provided, as well as opportunities to learn procedures and techniques necessary for the management of severely ill patients (e.g., vascular catheterization, hemodynamic monitoring, and mechanical ventilation). Weight 4. *Sladen and staff*

ANE-242(C). Anesthesiology Research. Selected students will participate actively in assigned research projects. These well focused segments of ongoing work in the Department of Anesthesiology are designed to provide an intensive exposure to the process of new investigation in applied pharmacology and physiology. Most students are based in the Anesthesiology Research Laboratories and strongly oriented toward personal involvement in the clinical research settings in the Duke University Medical Center operating rooms, obstetrical delivery areas, postoperative and intensive care units, the Hyperbaric Laboratories, the pain clinic, or the Clinical Research Unit. An important goal of this experience consists of guiding the student to take conceptual information and move this into concrete scientific presentation and publication. This course is designed primarily for the student who wishes to consider seriously a career in academic anesthesiology. Weight: 8. *Watkins, Camporesi, and Bennett*

Biochemistry

James B. Duke Professor Robert L. Hill, Ph.D. (Kansas, 1954), *Chairman*.

Professors: James B. Duke Professor Robert M. Bell, Ph.D. (California at Berkeley, 1970); G. Vann Bennett, M.D., Ph.D. (Johns Hopkins, 1976); James B. Duke Professor Irwin Fridovich, Ph.D. (Duke, 1955); Samson R.

Gross, Ph.D. (Columbia, 1953); Henry Kamin, Ph.D. (Duke, 1948); Norman Kirshner, Ph.D. (Pennsylvania State, 1952); Nicholas M. Kredich M.D. (Michigan, 1962); Robert J. Lefkowitz, M.D. (Columbia, 1966); Kenneth S. McCarty, Sr., Ph.D. (Columbia, 1957); Paul L. Modrich, Ph.D. (Stanford, 1973); K. V. Rajagopalan, Ph.D. (Univ. of Madras, 1957); Lewis M. Siegel, Ph.D. (Johns Hopkins, 1965); Leonard D. Spicer, Ph.D. (Yale, 1968); Robert E. Webster, Ph.D. (Duke, 1965).

Associate Professors: Ronald C. Greene, Ph.D. (California Inst. of Tech., 1954); Arno L. Greenleaf, Ph.D. (Harvard, 1974); Edward W. Holmes, Jr., M.D. (Pennsylvania, 1967); Tao-Shih Hsieh, Ph.D. (California at Berkeley, 1976); Bernard Kaufman, Ph.D. (Indiana, 1961); David C. Richardson, Ph.D. (Massachusetts Inst. of Tech., 1967); Harvey J. Sage, Ph.D. (Yale, 1958); Deborah A. Steege, Ph.D. (Yale, 1974); J. Bolling Sullivan, Ph.D. (Texas, 1966).

Assistant Professors: Michael D. Been, Ph.D. (Washington, 1982); Perry J. Blackshear, M.D. (Harvard, 1977); Rosalind Coleman, M.D. (Case Western Reserve, 1975); Carol A. Fierke, Ph.D. (Brandeis, 1984); Michael S. Herschfield, M.D. (Pennsylvania, 1967); Russel E. Kaufman, M.D. (Ohio State, 1973); Salvatore V. Pizzo, M.D., Ph.D. (Duke, 1973); Allen D. Roses, M.D. (Pennsylvania, 1967); David M. Schlossman, Ph.D. (Duke, 1978), M.D. (Duke, 1979); Gary L. Siles, M.D. (Vanderbilt, 1975); Robert W. Wheat, Ph.D. (Washington, 1955).

Associate Medical Research Professor: Jane S. Richardson, M.S., M.S.T. (Harvard, 1966).

Assistant Medical Research Professor: Jean L. Johnson, Ph.D. (Duke, 1974).

Adjunct Assistant Professor: Per-Otto Hagen, F.H.W.C. (Watt Univ. Scotland, 1961).

Research Associates: Karin A. Au, Ph.D.; Jeffrey A. Ahlgren, Ph.D.; Neil R. Bastian, Ph.D.; Wayne F. Beyer, Jr., Ph.D.; Mark A. Bolanowski, Ph.D.; Roy A. Borchardt, Ph.D.; David J. Burns, Ph.D.; Andrew T. Canada, Jr., Ph.D.; Muktimoy Chaudhury, Ph.D.; Michel Deschuyteneer, Ph.D.; Allen E. Eckhardt, Ph.D.; Robert J. Foglesong, Ph.D.; Barbara Hindenach, Ph.D.; Michael H. Hecht, Ph.D.; James A. Imlay, Ph.D.; Hans Kaiser, Ph.D.; Thomas W. Kirby, Ph.D.; Ekaterini Kordeli, Ph.D.; Robert S. Lahue, Ph.D.; Carson R. Loomis, Ph.D.; Sue H. Neece, Ph.D.; Toshiro Okazaki, Ph.D.; Pamala A. Pavco, Ph.D.; David H. Price, Ph.D.; Christopher Privalle, Ph.D.; Stuart J. Swiedler, M.D., Ph.D.; Paul Van Veldhoven, Ph.D.; Beverly M. Yashar, Ph.D.; Lawrence J. Young, M.D., Ph.D.; William A. Zehring, Ph.D.

Emeriti: Mary L. C. Bernheim, Ph.D.; Walter R. Guild, Ph.D.; Jerome S. Harris, M.D.; Yashiko Nozaki, Ph.D.

Required Courses

BCH-200. The core course given to all freshman medical students during a period of thirteen weeks in the first term;us;us;md;us;usemphasizes the relationship between structure and function of the major classes of macromolecules in living systems including proteins, carbohydrates, lipids, and nucleic acids. The metabolic interrelationships and control mechanisms are discussed as well as the biochemical basis of human diseases.

BCH-201. The required course in genetics for all first-year students is given during four weeks at the end of the first term. The course considers the fundamental processes of heredity from a biochemical viewpoint, together with a brief survey of classical genetics to provide context for the molecular phenomena. Its purpose is to provide an adequate background to allow the student to communicate with professional geneticists and to understand the new molecular and cellular techniques for analysis of the human genome and evaluation of the genetic aspects of disease.

Electives

BCH-215(B). Molecular Genetics I: Genetic Mechanisms. A study of genetic mechanisms in molecular terms with emphasis on gene function, segregation and regulation in procaryotes and eucaryotes. The systems covered will include bacterial viruses, bacteria, plasmids, cellular organelles, and selected lower and higher eucaryotes. Course material will be drawn from the original literature and will be integrated as much as possible with Biochemistry 268. Weight: 3. *Webster and staff*

BCH-234(B). Metabolic-Genetic Disease Seminar. Diseases of metabolism studied in detail with an emphasis on genetic mechanisms and inborn errors of metabolism. The format consists of student seminars, textbook and literature reading. The group will be small enough to permit maximal personal interaction, particularly between students and faculty. Weight: 3. *Kredich*

BCH-259(B). Molecular Biology I. Protein and Membrane Structure/Function. Detailed concepts of the structure and function of proteins as enzymes and as structural elements of cellular substructures, including: protein primary structure and its determi-

nation, patterns of protein folding, mechanisms of enzyme catalysis and other constituents of biological membranes. Weight: 3. *Bell, Abernethy, Fridovich, and J. Richardson*

BCH-268(B). Molecular Biology II. Nucleic Acids. Consideration of structure and metabolism of nucleic acids in the context of their biological function in information transfer. Emphasis will be on the current research literature. Weight: 4. *Modrich, Bastia, and Steege*

BCH-288(B). The Carbohydrates and Lipids of Biological Systems. The subjects will be considered in the following two general categories: (1) The relationship between structure and function; particularly, (a.) cell surface carbohydrates as antigenic determinants and their relationship to viral and carcinogen transformation, (b.) connective tissue mucopolysaccharides, (c.) structural features of lipids and phase transitions. (2) Biosynthesis and catabolism. Weight: 2. *Kaufman*

BCH-291(B). Physical Biochemistry. Principles of thermodynamics, hydrodynamics, spectroscopy, and X-ray diffraction and scattering are applied to biological systems. Biological molecules and macromolecules in both soluble and crystalline states are discussed. Weight: 3. *Hsieh, Richardson, Sage, and Spicer*

BCH-297(B). Intermediary Metabolism. Lectures and student presentations on selected topics in the areas of metabolic regulation, bioenergetics, and other subjects of current research interest in metabolism. Weight: 3. *Siegel, Bell, Hill, Fridovich, Kamin, and Reynolds*

BCH-299(B). Nutrition. This course will examine the experimental basis for the identification and quantitation of requirements for calories, macronutrients, and micronutrients (vitamins and minerals). It will deal with the biochemistry of nutrition, with the assessment of nutriture, and with the biological effects of deficiency or excess of nutrients. This course will seek to define optimal nutriture and will search for the factual bases (if they exist) for commonly held beliefs on the nutrition of individuals and populations. The course will consist of informal lectures and, if possible, student seminars. Weight: 2. *Kamin*

BCH-320(B). Cell Differentiation in Development and Disease. An introduction to the organization of the eukaryotic genome provided by recent technical advances in genetics and the use of recombinant DNA probes. Chromosome inactivation, gene amplification, and the impact of nucleocytoplasmic interactions on the regulation of differentiation will be considered. Transition phases of cell cycle will be discussed in regard to normal and oncogene function. Conferences will be devoted to specific examples dealing with critical aspects of differentiation involved in development of normal and disease states. The course is designed as an introduction to Hormone and Tissue Interactions in Differentiation and Disease. Weight: 2. *McCarty and Counce*

BCH-321(B). Hormone and Tissue Interactions in Differentiation and Disease. Hormones and other biochemical signals involved in the regulation of the differentiated state including amino acids, polypeptide and steroid hormone response in insects, snails, and higher vertebrates will be discussed in terms of the new biotechnology used to elucidate mechanisms of information transfer and gene control at the level of the chromatin. Cell-cell, cell-matrix, and hormonal interactions will be considered as control elements in development and differentiation. Interactions involving the cell surface, the basal lamina, and extracellular matrix will be discussed in terms of differentiation of limb bud/pancreas/lymphocyte and neural tissue. Conferences will include hormone control of sex differentiation, ectopic hormone biosynthesis, and endocrine related diseases. The course is designed as an extension of the course Differentiation in Development and Disease. Weight: 2. *McCarty, Sr., Kaufman, and K. McCarty, Jr.*

BCH-357(B). Research in Biochemistry. In a limited number of cases, a student will be permitted to participate in the research program of a faculty member. Acceptance is

by individual arrangement with the proposed faculty preceptor. Weight: 1-18 per term.
Staff

BCH-358(B). Research in Biochemistry. In a limited number of cases, a student will be permitted to participate in the research program of a faculty member. Acceptance is by individual arrangement with the proposed faculty preceptor. Weight: 1-18 per term.
Staff

BCH-360(B). Clinical Chemistry Laboratory. Medical students may participate in the program of the Clinical Chemistry Laboratory on a tutorial basis. The course is tailored to the student's particular training needs. Students must receive the permission of the instructor. Weight: 4. *Bittikofer*

Community and Family Medicine

Associate Professor: George R. Parkerson, Jr., M.D. (Duke, 1953), M.P.H. (North Carolina at Chapel Hill, 1977) *Chairman*.

Assistant Professors: Walter E. Broadhead, M.D. (Duke, 1981), Ph.D. (North Carolina at Chapel Hill, 1987), *Director of Research*; Katharine A. Munning, Ph.D. (Iowa, 1979), *Director of Education*.

DIVISION OF BIOMETRY

Associate Professor: William E. Wilkinson, Ph.D. (North Carolina at Chapel Hill, 1968); *Chief*.

Professors: Thomas E. Frothingham, M.D. (Harvard, 1951); William E. Hammond, Ph.D. (Duke, 1967).

Associate Professors: Frank E. Harrell, Jr., Ph.D. (North Carolina at Chapel Hill, 1979); Kerry L. Lee, Ph.D. (North Carolina at Chapel Hill, 1974); Lloyd R. Smith, Ph.D. (Alabama, 1985); William W. Stead, M.D. (Duke, 1973).

Assistant Professors: Michael J. Belyea, Ph.D. (North Carolina State, 1981); Carol Bigelow, Ph.D. (Washington, 1984); Daniel G. Blazer II, M.D. (Tennessee, 1969), Ph.D. (North Carolina at Chapel Hill, 1980); Deborah V. Dawson, Ph.D. (North Carolina at Chapel Hill, 1981); Elizabeth R. Delong, Ph.D. (North Carolina at Chapel Hill, 1979); Kathryn Magruder-Habib, Ph.D. (North Carolina at Chapel Hill, 1978); Lawrence H. Muhlbaier, Ph.D. (North Carolina at Chapel Hill, 1981), Clifford H. Patrick, Ph.D. (Duke, 1971).

Assistant Clinical Professor: John R. Feussner, M.D. (Vermont, 1973).

Medical Research Professor: Kenneth G. Manton, Ph.D. (Duke, 1974).

Research Associates: James D. Collins, Ph.D. (Duke, 1982); Michael Helms, B.S. (North Carolina at Chapel Hill, 1971).

DIVISION OF COMMUNITY MEDICINE

Assistant Professor: James L. Michener, M.D. (Harvard, 1978); *Chief*.

Professors: David M. Eddy, M.D. (Virginia, 1963), Ph.D. (Stanford, 1978); Clark C. Havighurst, J.D. (Northwestern, 1958); Harmon L. Smith, Ph.D. (Duke, 1962); David G. Warren, J.D. (Duke, 1964).

Associate Professor: Joseph Lipscomb, Jr., Ph.D. (North Carolina at Chapel Hill, 1975).

Assistant Professors: John B. Nowlin, M.D. (Duke, 1959); Ruby L. Wilson, Ed.D. (Duke, 1968).

Associate: Catherine M. Severns, R.N.P. (Yale, 1971).

Assistant Clinical Professors: Melvin Berlin, M.D. (Duke, 1953); Howard J. Eisenson, M.D. (Duke, 1979).

Clinical Associates: Marci K. Campbell, M.P.H. (North Carolina at Chapel Hill, 1977); Judith K. Visscher, M.D. (Washington, 1982); Anne Walch, B.H.S. (Duke, 1985).

Research Associates: James M. Schmidt, B.H.S. (Duke, 1974); William T. Vaughan, R.Ph., R.P.A. (North Carolina at Chapel Hill, 1972).

DIVISION OF OCCUPATIONAL MEDICINE

Associate Clinical Professor: George W. Jackson, M.D. (Western Reserve, 1968), *Chief*.

Professor: Siegfried H. Heyden, M.D. (Univ. of Berlin, Germany, 1951).

Assistant Professors: Kendall Green, M.D. (New York, 1983); Ph.D. (New York 1980).

Assistant Clinical Professors: John W. Cromer, Jr., M.D. (Nebraska, 1972); Gary N. Greenberg, M.D. (Northwestern, 1978), M.P.H. (North Carolina at Chapel Hill, 1983); Rodney L. Lowman, Ph.D. (Michigan State, 1979); Woodhall Stopford, M.D. (Harvard, 1969), M.S.P.H. (North Carolina at Chapel Hill, 1980); Wayne R. Thomann, Ph.D. (North Carolina at Chapel Hill, 1983).

Clinical Associates: Gary N. Pasternak, M.D. (California at San Diego, 1983), M.P.H. (California at Berkeley, 1987); Gwendolyn Powell, M.D. (Miami, 1981), M.P.H. (North Carolina at Chapel Hill, 1986).

DIVISION OF FAMILY MEDICINE

Assistant Professor: Keith A. Frey, M.D. (Medical College of Virginia, 1979); *Chief.*

Professor: E. Harvey Estes, Jr., M.D. (Emory, 1947).

Associate Professors: Barrie J. Hurwitz, M.D. (Witwatersrand, South Africa, 1968); Robert J. Sullivan, Jr., M.D. (Cornell, 1966), M.P.H. (North Carolina at Chapel Hill, 1973), Samuel W. Warburton, Jr., M.D. (Pennsylvania, 1969).

Assistant Professors: Kathryn A. Andolsek, M.D. (Northwestern, 1975); Don W. Bradley, M.D. (Med. Coll. of Virginia, 1976); Keith A. Frey, M.D. (Med. Coll. of Virginia, 1979).

Assistant Clinical Professors: Joyce A. Copeland, M.D. (North Carolina at Chapel Hill, 1975); James N. Finch, M.D. (South Florida, 1981); Richard K. Serra, M.D. (Michigan, 1977).

Clinical Associates: Hendy H. Buckley, Ph.D., (Duke, 1980); Valerie Profitt, R.P.A. (Bowman Gray, 1973).

Clinical Instructor: Joseph W. Kertesz, Jr., M.A. (Michigan, 1973).

DIVISION OF PHYSICIAN'S ASSISTANT TRAINING

Assistant Clinical Professor: Reginald D. Carter, Ph.D. (Bowman Gray, 1970), *Chief.*

Assistant Clinical Professor: Michael A. Hamilton, M.D. (Rochester, 1964), *Medical Director.*

Professor: Arthur C. Christakos, M.D. (South Carolina, 1955).

Assistant Professor: Malcolm Henderson Rourk, Jr., M.D. (Pennsylvania, 1963).

Assistant Clinical Professor: Marcia E. Herman-Giddens, B.H.S. (Duke, 1978).

Clinical Associates: Patricia A. McKelvey, M.P.A. (Pennsylvania State, 1983); Phillip A. Price, B.H.S. (Duke, 1982); Jan Victoria Scott, B.H.S. (Duke, 1981).

Instructor: Joyce Nichols, R.P.A. (Duke, 1970).

DUKE DIET AND FITNESS CENTER

Assistant Clinical Professor: Michael A. Hamilton, M.D. (Rochester, 1964), *Chief.*

Assistant Clinical Professor: Ronette L. Kolotkin, Ph.D. (Minnesota, 1978).

ADJUNCT FACULTY

Adjunct Professors: Barbara S. Hulka, M.D. (Columbia, 1959), M.P.H. (Columbia, 1961), Chapel Hill, NC; Richard J. Levine, M.D. (St. Louis, 1971), Research Triangle Park, NC.

Adjunct Associate Professor: Stephen H. Gehlbach, M.D. (Western Reserve, 1968), M.P.H. (North Carolina at Chapel Hill, 1974), Amherst, MA; James F. Gifford, Jr., Ph.D. (Duke, 1969), Durham, NC; Richard J. Levine, M.D. (St. Louis, 1971), Research Triangle Park, NC.

Adjunct Assistant Professors: James D. Bernstein, M.H.A. (Michigan, 1968), Raleigh, NC; Lawrence E. Myers, Ph.D. (California at Berkeley, 1972), Research Triangle Park, NC.

COMMUNITY FACULTY

Assistant Professor: Lars C. Larsen, M.D. (New York at Syracuse, 1973); Fayetteville, NC.

Associate: Bruce W. Blackwell, M.D. (Ohio, 1980), Fayetteville, NC.

Associate Clinical Professor: Charles Ellenbogen, M.D. (Chicago-Pritzker, 1964), Fayetteville, NC.

Assistant Clinical Professor: Van J. Stitt, M.D. (North Carolina at Chapel Hill, 1975), Fayetteville, NC; James M. Wetter, M.D. (New York at Buffalo, 1974), Fayetteville, NC.

Clinical Associates: Marla L. Berg-Weger, M.S. (Kansas, 1983), Fayetteville, NC; Thomas W. Stearns, Ph.D. (Florida State, 1980), Fayetteville, NC; John S. Weiner, Pharm. D. (Michigan, 1982), Fayetteville, NC.

Consulting Professor: Donald M. Hayes, M.D. (Bowman Gray, 1954), Greensboro, NC.

Associate Consulting Professor: Sigrid J. Nelius, M.D. (Ludwig Maximilian, Germany, 1949), Durham, NC.

Assistant Consulting Professors: James C. Abell, M.D. (North Carolina at Chapel Hill, 1966), Statesville, NC; Joseph E. Agsten, M.D. (North Carolina at Chapel Hill, 1973), Kinston, NC; Lawrence M. Alexander, M.D. (Duke, 1952), Sanford, NC; J. Powell Anderson, M.D. (Duke, 1949), Waynesboro, VA.; Paul S. Andrews, M.D. (North Carolina at Chapel Hill, 1981), Durham, NC; William G. Aycok, M.D. (Duke, 1954), Mebane, NC; Evan A. Ballard, M.D. (Duke, 1976), Jonesville, NC; Daniel H. Barco, M.D. (Duke, 1972), Durham, NC; James E. Barham, M.D. (Duke, 1974), Anderson, SC; Ruby W. Barker, M.D. (North Carolina at Chapel Hill, 1967), Durham, NC; William J. Blackley, M.D. (North Carolina at Chapel Hill, 1975), Elkin, NC; James S. Blair, Jr., M.D. (Maryland, 1947), Wallace, NC; Donald E. Bley, M.D. (Duke, 1972), Fredericksburg, VA.; Susan E. Brown, M.D. (Georgetown, 1976), Durham, NC; Jack R. Cahn, M.D. (Pennsylvania State, 1972), Sparta, NC; Walker H. Campbell, M.D. (Med. Coll. of Virginia, 1963), Goldsboro, NC; Jane T. Carswell, M.D. (Med. Coll. of Virginia, 1958), Lenoir, NC; Jerry Cassuto, M.D. (New York Med. Coll., 1956), Greensboro, NC; Robert S. Cline, M.D. (North Carolina at Chapel Hill, 1957), Sanford, NC; Timothy D. Coughlin, M.D. (Cincinnati, 1972), Reno, NV; Bruce A. Dalton, Jr., M.D. (North Carolina at Chapel Hill, 1969), Research Triangle Park, NC; Charles Davant, Jr., M.D. (Med.

Univ. of South Carolina, 1945), Blowing Rock, NC; Charles Davant III, M.D. (North Carolina at Chapel Hill, 1978), Blowing Rock, NC; John D. Davis, Jr., M.D. (North Carolina at Chapel Hill, 1978), Blowing Rock, NC; Clyde J. Dellinger, M.D. (Duke, 1961), Drexel, NC; Curtis J. Eshelman, M.D. (Michigan, 1971) Durham, NC; Lawrence L. Fleenor, M.D., (Virginia, 1966), Big Stone Gap, VA; John S. Gaskin, Jr., M.D. (Duke, 1959), Albemarle, NC; Raymond A. Gaskins, Jr., M.D. North Carolina at Chapel Hill, 1975), Fayetteville, NC; Harry I. Geisberg, M.D. (Louisville, 1972), Anderson, SC; E. Wilson Griffin III, M.D. (Duke, 1977), Jonesville, NC; Albino Gomez-Uria, M.D. (Madrid School of Medicine, 1962), Asheville, NC; Michael D. Gooden, M.D. (North Carolina at Chapel Hill, 1973), Goldsboro, NC; Jeffrey S. Harris, M.D. (New Mexico, 1975), Nashville, TN; James K. Hartye, M.D. (Vanderbilt, 1977), North Wilkesboro, NC; Francis E. Hayes, M.D. (Tufts, 1978), Concord, NH; Richard R. Honablue, M.D. (Meharry, 1974), Williamsburg, VA; Paul O. Howard, M.D. (Virginia, 1955), Sanford, NC; Peter Jacobi, M.D. (Case Western Reserve, 1979), Durham, NC; Lane E. Jennings, M.D. (Miami, 1975), Port Orange, FL; Pamela H. Jessup, M.D. (Bowman Gray, 1977), Sanford, NC; Eric M. Johnsen, M.D. (Wayne State, 1977), Albemarle, NC; Lyndon K. Jordan, M.D. (Duke, 1961), Smithfield, NC; Hervy B. Kornegay, Sr., M.D. (Bowman Gray, 1957), Mount Olive, NC; Charles W. Lapp, M.D. (Albany Med. Coll., 1974), Raleigh, NC; Walter L. Larimore, M.D. (Louisiana, 1977), Bryson City, NC; Stephen C. Lies, M.D. (Duke, 1976), Goldsboro, NC; Richard V. Liles, Jr., M.D. (North Carolina at Chapel Hill, 1957), Albemarle, NC; Mary E. Lyon, M.D. (Boman Gray, 1977), Sparta, NC; Robert H. McConville, Jr., M.D. (Indiana, 1972), Sanford, NC; G. Yancey Mebane, M.D. (Duke, 1954), Mebane, NC; Albert A. Meyer, M.D. (State Univ. of New York, 1975), Thomasville, GA; Robert S. Meyer, M.D. (Temple, 1974), Mount Olive, NC; John W. Nance, M.D. (Bowman Gray, 1948), Clinton, NC; Robert B. Nieland, M.D. (Iowa, 1969), Hickory, NC; Talbot F. Parker, Jr., M.D. (Jefferson, 1951), Goldsboro, NC; Melvin T. Pinn, Jr., M.D. (Virginia, 1976), Charlotte, NC; Calvin Reams III, M.D. (Miami, 1975), Thomasville, NC; Jessica Sax-Schorr, M.D. (Tufts, 1977), Charlotte, NC; Charles P. Scheil, M.D. (Duke, 1958), Lenoir, NC; Evelyn D. Schmidt, M.D. (Duke, 1951), M.P.H. (Columbia, 1962) Durham, NC; Harold D. Schutte, M.D. (Loma Linda, 1962), Asheville, NC; Robert H. Shackelford, M.D. (Bowman Gray, 1947), Cary, NC; Philip G. Singer, M.D. (Duke, 1975), Hillsborough, NC; Hal M. Stuart, M.D. (Bowman Gray, 1956), Elkin, NC; William B. Tarry, Jr., M.D. (Med. Coll. of Virginia, 1953), Oxford, NC; Richard L. Taylor, M.D. (North Carolina at Chapel Hill, 1962), Oxford, NC; George R. Tucker, Jr., M.D. (North Carolina at Chapel Hill, 1955), Henderson, NC; Beverly W. Tucker, M.D. (North Carolina at Chapel Hill, 1966), Henderson, NC; Christopher Unger, M.D. (Pennsylvania, 1969), Bethesda, MD; William B. Waddell, M.D. (Duke, 1962), Galax, VA; Joseph E. Walker, M.D., (Duke, 1960), Galax, VA; Joseph B. Warren, M.D. (Duke, 1951), New Bern, NC; John W. Watson, M.D. (Med. Coll. of Virginia, 1953), Oxford, NC; Abner C. Withers, M.D. (North Carolina at Chapel Hill, 1962), Morganton, NC; Glenn A. Withrow, M.D. (North Carolina at Chapel Hill, 1985), Durham, NC; Jerry W. Withrow, M.D. (North Carolina at Chapel Hill, 1980), Durham, NC; Robert K. Yowell, M.D. (Duke, 1961), Durham, NC.

Consulting Associates: John B. Anderson, Jr., M.D. (Cincinnati, 1980), Oxford, NC; Daniel D. Crummett, M.D. (Wayne State, 1982), Hillsborough, NC; R. Scott Eden, M.D. (Duke, 1980), Annapolis, MD; William E. Hall, M.D. (Abraham Lincoln, 1973), Sanford, NC; David C. Jones, M.D. (Duke, 1979), Mebane, NC; William R. Lambeth, M.D. (Bowman Gray, 1974), Durham, NC; Frank W. Leak, M.D. (North Carolina at Chapel Hill, 1967), Clinton, NC; Linda T. McAlister, M.D. (California at San Francisco, 1978), Fayetteville, NC; J. T. Newton, M.D. (North Carolina at Chapel Hill, 1981), Clinton, NC; Latham C. Peak, M.D. (Bowman Gray, 1951), Clinton, NC; John L. Rouse III, M.D. (Bowman Gray, 1973), Clinton, NC; Kurt Stange, M.D. (Albany, 1983), Durham, NC; Allen H. Van Dyke, Jr., M.D. (Bowman Gray, 1971), Durham, NC; Gregory K. Whitaker, M.D. (South Carolina, 1978), Fayetteville, NC.

Emeriti: Leonard J. Goldwater, M.D.; Dorothy E. Naumann, M.D.; Eva J. Salber, M.D.; Max Woodbury, Ph.D.

Required Course

CFM-205. Clerkship in Family Medicine. This basic course in family medicine consists of an eight-week clinical clerkship in the second year. The educational goal is that students understand the principles of family medicine and the application of these principles in community practice. Emphasis is placed upon the provision of continuous comprehensive health care for people of both sexes and all ages within the context of their social groups and the communities where they live. Of particular importance are the diagnosis and management of common medical problems and health maintenance, ambulatory care, continuity of care and the role of consultants in primary care. Students also study social factors, such as the doctor-patient relationship, the role of the physician in the community and the economics of health care delivery.

The clerkship is a two-part experience, approximately half with full-time family medicine faculty in the ambulatory health care facilities in Durham closely affiliated with the Duke University Medical Center, and the other half with community-based faculty who are practicing family physicians in communities other than Durham, but principally within North Carolina. In both components of the course the learning experience is centered upon patients which students help diagnose and manage under the guidance of the

departmental faculty. Patients are seen in a variety of sites, including the office, home, nursing homes, public health clinics, and community hospitals.

This experience offers the student a broad and realistic perspective of medicine and its relationship to other important institutions in the community. It also provides a basis for understanding the interdependent relationships between community and referral center physicians.

As an alternative to CFM-205, the student may substitute CFM-207, the four-week preceptorship component, in combination with MED-207, the four-week neurology clerkship.

CFM-207. Preceptorship in Family Medicine. This course is identical to the preceptorship component of CFM-205, described above. Each student has a choice of either CFM-205 or a combination of CFM-207 and MED-207.

Electives

CFM-211(B). Probability and Statistical Inference. Laws of probability, probability distributions, descriptive statistics, graphical displays of relationships, philosophy of statistical tests, tests for differences in central tendency, paired comparisons and correlation. Type I and Type II errors and problems of multiple comparisons. Weight: 3. *Dawson*

CFM-212(B). Design of Etiological, Clinical and Experimental Studies. General principles of study design. Observational studies, including case-control and cohort designs, their relative advantages and statistical methods used in their analysis. Experimental studies, including randomized controlled clinical trials, their principal features, ethics and alternative sequential design strategies. Design of data collection instruments and studies to assess observer variability and to evaluate diagnostic tests. Weight: 3. *Smith*

CFM-213(B). Medical Data Management and Statistical Computing. Basic computer organization and operation, data entry, quality control, data management considerations and file structures. Using SAS for storing, manipulating and analyzing data. Weight: 3. *Harrell and Muhlbaier*

CFM-217(B). Clinical Decision Analysis. Using formal methods for analyzing complex patient management problems. Structuring problems as trees. Applying data from the literature to estimate the likelihood of outcomes. Quantitating the value of health outcomes. Calculating the strength of preference for one strategy over others. Decision analysis as a guide to clinical research and as a policy tool. Weight: 3. *Matchar*

CFM-233(B). Biomedical Uses of Computers. An indepth study of the use of computers in biomedical applications. Important concepts related to hardware, software, and applications development will be studied through analysis of state-of-the-art systems involving clinical decision support, computer-based interviewing, computer-based medical records, departmental/ancillary systems, instructional information systems, management systems, national data bases, physiological monitoring, and research systems. C-L: Biomedical Engineering 243. Weight: 3. *Hammond*

CFM-234(B). Artificial Intelligence in Medicine. An introduction to basic concepts of artificial intelligence (AI) and an indepth examination of medical applications of AI. The course includes heuristic programming and a brief examination of the classic AI programming languages (LISP and PROLOG) and a study of rule-based systems and cognitive models. Specific applications examined in detail include MYCIN, ONCOCIN, PIP, CASNET, and INTERNIST and selected EXPERT systems. C-L: Biomedical Engineering 265. Weight: 3. *Hammond*

CFM-235(B). Microprocessors and Digital Instruments. Design of microcomputer-based devices including both hardware and software considerations of system design. Primary emphasis on hardware aspects, including a progression through initial design,

prototype construction in the laboratory, testing of prototypes to locate and correct faults, and final design evaluation. Evaluation includes examination of complexity, reliability and cost. Design and construction oriented toward biomedical devices or instruments that include dedicated microcomputers, usually operating in real time. C-L: Biomedical Engineering 205. Weight: 3. *Hammond*

CFM-236(B). Digital Computers and Their Application in Ambulatory Care. For students desiring an intensive exposure to medical computer application. The flexible format of the course permits a variety of projects in computer medicine. Examples include projects in medical data bases; interactive patient interviewing; computer-aided instruction; patient/physician education; data collection, organization, retrieval, display, and analysis; and physician-assist programs. Opportunities exist for activities at Pickens Family Practice in Durham, Duke/FAHEC Family Medicine Center in Fayetteville and other sites. Weight: 1-8. *Hammond, Michener, and Blackwell*

CFM-238(B). Tutorial in Community and Family Medicine. An eight week, individually arranged experience in which the student participates in the research program of a faculty member. The subject matter, course weight, and meeting time will be arranged with the faculty member. Each student will meet regularly with the faculty preceptor and will carry out a project related to the preceptor's work. Through these discussions and project, the student will be able to develop an understanding of the discipline involved. Possible areas include health education, geriatrics, family dynamics, occupational health, health assessment, medical education, management sciences, economic aspects of health care, computer technology, biostatistics and epidemiology clinical decision making, diagnosis and management of common problems, alcoholism and social support systems. Because of the variety of projects available and the necessity of prior arrangements, it is essential that interested students consult with the instructor or staff at least two months before the beginning of the term selected. Weight: 1-18. *Parkerson and staff*

CFM-240(B). Epidemiologic Methods in Primary Care Research. This is a survey course covering basic principles and methods of epidemiologic research and their application to primary care populations. Topics covered in this course include refining a research question, methods of reviewing the literature, ethical considerations in research involving human subjects and the basic types of study design in epidemiology. Other concepts of design, analysis and interpretation of data to be covered include errors in statistical inference, bias, confounding, interaction, and epidemiologic inference. Methods of questionnaire design and data collection will be studied as well as the logistics of study implementation, and basic methods of data analysis. Course activities include lecture, directed readings and discussions of research questions chosen by the students in consultation with the instructors. Students are required to prepare a detailed study proposal by the end of the term. Interested students should consult with the instructor at least two months before the beginning of the term. Weight: 2. *Broadhead and Magruder-Habib*

CFM-242(B). Nutrition Epidemiology. Nutrition epidemiology may be defined as the study of the role of the nutrition factor in the causal web of illness patterns in human populations. This course offers a systematic review of population approaches to the study of nutrition. Currently, most nutrition courses are primarily concerned with studies using in vitro laboratory techniques, animal models, or individual human subjects, with minimal emphasis on human population groups in their natural environments. In the course, emphasis will be placed on methods available for chronic disease epidemiologic research since most nutritional disorders in man are basically chronic. Particular attention will be directed to principles of research design and critical analyses of selected studies. It is hoped that at the completion of the course, the student will be prepared to design and conduct population-based studies on human nutrition. Weight: 1. *Heyden*

CFM-243(B). Occupational Medicine. (Formerly Medicine and Industry). In this four to eight weeks course, students participate in projects being conducted in the Division of Occupational Medicine. Background material will be presented covering history of occupational (industrial) medicine, labor legislation, workmen's compensation and the Occupational Safety and Health Act (OSHA) of 1970. Clinical and epidemiological aspects of occupational diseases will be included, with emphasis on industrial hygiene and toxicology. Organization and administration of employee health programs will also be considered, with visits to representative establishments as part of the experience. Typical projects include such matters as evaluation of chemical exposures in the work environment, reactions of humans to chemical stress, medical evaluation of suspected cases of occupational disease. Weight: 6. *Cromer, Stopford, and Jackson*

CFM-244(B). Seminars in Occupational Medicine and Toxicology. Seminar topics will generally relate to occupational/environmental hazards important to North Carolina. Toxicologic hazards associated with agriculture, textiles, mining, furniture manufacturing, primary and secondary chemical industries, research and health care institutions will be discussed. Duke faculty and outside faculty will be participants in this seminar series. Weight: 2. *Cromer and Stopford*

CFM-245(B). Organization and Management of Ambulatory Care Centers. A series of seminars to discuss ambulatory care systems. Material covered will be of interest to all students who will work in an office setting. Emphasis will be placed on the group practice as a mechanism for providing ambulatory health services. Topics of discussion will include the conceptual basis for organizing ambulatory care centers; center objectives; automated subsystems for registration, appointments, diagnostic studies, health providers and managers; marketing; human relations; professional recruitment and group selection; financial forecasting and budgeting. During the second term discussions will center around specific areas of interest with participation in direct application. Weight: 1-2. *Michener and Kozel*

CFM-246(B). Historical Studies in a Medical Specialty. This elective is offered primarily to those who have made the choice of their probable career specialty. It is intended to provide an appreciation of the developments in that specialty and thereby deepen an understanding of it. While the choice of elective topic will be made on an individual basis and depend on the interests of each student, emphasis generally will be placed on specific theoretical, practical, and organizational developments since the second half of the nineteenth century. The format comprises selected readings, tutorials, and student project. Weight: 1 or 2. *Crellin, Gifford, and English*

CFM-247(B). Medicine in America. The historical development of the medical profession in the United States, with attention to such topics as the changing basis of authority for medical practice, the education of the physicians, the impact of science and technology on health care, physician-patient relations, the organization of the profession as a whole and by specialty, the emergence of the hospital, the role of government in health care delivery and contemporary criticisms of the health care system. The history of the Duke University Medical Center provides a recapitulation of course themes. Additional units of credit may be earned through independent study. Weight: 1. *Gifford*

CFM-248(B). The Development of and Perspectives on Modern Medicine. Comprising lectures, discussion, and readings, this course outlines the general history of medicine, with particular attention given to recent developments. The course will include such topics as the contributions of William Harvey, aspects of clinical diagnosis, and the evolution of key concepts in modern medicine such as cell theory, the germ theory, anticepsis, and theories of immunity. Full use will be made of the excellent resources of the Trent Collections. Additional unit of credit may be earned through independent study. Weight: 1. *Crellin and Gifford*

CFM-250(C). Clinical Nutrition. This course will provide an overview of and practice in the assessment and management of common nutritional problems in primary care. Topics will include nutritional assessment, prenatal nutrition, breastfeeding, pediatric nutrition, nutritional care of the diabetic, obesity, nutrition in geriatrics, and preventive nutrition. Weight: 1. *Kramish and Michener*

CFM-251(C). Tutorial in Clinical Nutritional Epidemiology. (1) Coronary heart disease; risk factor concept, the latest development in prevention; international intervention studies. (2) Cerebrovascular disease; hypertension intervention; mass strategy of prevention vs. individual case treatment. (3) Major neoplastic diseases: breast cancer, prostate cancer, colon cancer, lung cancer, oral cancer; cancer education and screening in industry. (4) Clinical nutrition. Potassium - sodium. Cholesterol controversies. Weight reduction. Diabetes diet. Coffee and caffeine studies. Weight: 2. *Heyden*

CFM-256(C). Ethical Issues in Medicine. This seminar will examine ethical questions raised by modern biomedical science and technology, with special attention to their implications for primary care practitioners. It will offer both historical and systematic analysis, and attend to models of physician-patient relationships. Among topics for consideration will be ethical method; resource allocation, justice, and public policy; medical beneficence; and concepts of rights; together with selected practice-related issues (e.g., truth-telling, confidentiality, abortion, contraception, consent, definition and meaning of death, behavior modification, and the like). Weight: 1. *Smith*

CFM-257(C). Philosophic Problems for Physicians. This seminar is designed to help the fourth year medical student prepare for becoming an intern/resident in the areas of dealing with patients: taking on that level of responsibility; telling the family/patient about serious illness or about the patient's terminal condition; working with a family at the time of death; and dealing personally and professionally with the kinds of pressures placed on the intern/resident (how to do more than survive the next three to five years, keeping marriage together, being a parent, etc.) Weight: 2 or 4. *Puckett and staff*

CFM-258(C). Legal Issues in Medicine. A seminar which introduces participants to the basic approach of law and legal process to contemporary issues in medical care, including malpractice, hospital privileges, confidentiality, natural death, abortion, consent/authorization for treatment, human experimentation, and peer review. Topics may be chosen by individual students. Common misconceptions about malpractice law and the rights of physicians and patients as well as the legal mechanisms for resolving disputes will be examined. Weight: 2. *Warren*

CFM-259(C). Advanced Clerkship in Family Medicine. Students will participate in the management of a wide variety of ambulatory patients at the Duke Family Medicine Center, Pickens Family Practice in Durham or in the Duke-FAHEC Family Medicine Center in Fayetteville, N.C., under the guidance of faculty family physicians. Emphasis will be placed on comprehensive continuous care, and the rational and cost-effective approach to diagnosis and treatment. Weight: 2-8. *Michener and staff*

CFM-261(C). Family Medicine Continuity Experience. Students will manage a panel of patients over an extended period of time at the Pickens Family Practice Center under supervision of faculty and fellows. Patient care will be scheduled for one to two half days a week for two to four months, and the rotation may be repeated to provide further continuity. A student project is also required. Weight: 2-8. *Michener and staff*

CFM-262(C). Clerkship in Occupational Medicine. This four to eight week clerkship is flexible and can offer experiences in the area of the design of occupational health programs, the management of occupational health services, and the care and evaluation of workers exposed to various chemical and physical agents. Seminars during the

rotation can cover such topics as industrial toxicology, ergonomics, physiological stress in the work place, legal and ethical issues in occupational medicine and health promotion. Weight: 6. *Stopford and staff*

CFM-263(C). Relating to the Patient as a Family Doctor. Family dynamics and psychosomatic concepts are related to family medicine and primary care. Weight: 2. *Kertesz and Finch*

CFM-267(C). Team Training in Health Delivery. This course provides experience in the delivery of health care in a setting which utilizes a variety of health professionals such as physicians, physician assistants, nurses, psychologists, nutritionists, exercise physiologists, and support personnel. The student will learn the team approach in the education and treatment of patients with weight management problems associated with dysfunctional lifestyle. Direct observation, participation in clinical services, assigned readings, and tutorials are the teaching strategies used. Prerequisite: permission of instructor. Weight: 4-8. *Hamilton, Kolotkin, Cogburn, and Moore*

CFM-271(C). The Computer Textbook of Medicine. Students will participate in the ongoing development of a computerized database in cardiovascular disease. They will participate in research concerning the diagnosis, treatment, and prognosis of patients with coronary artery disease, and they will learn how to make predictions about outcome based on test results of patients on the cardiology service. Weight: 2 and 4. *Pryor, Califf, Lee, and Harrell*

CFM-273(C). The Ideal Physician. What is the role of the physician in relating with patients? How do you communicate with patients and families? How well do you do this? What is your "bedside manner?" How do you learn about this other than through models and self-reflection? This seminar will provide a small group atmosphere for learning more about such skills and for receiving direct feedback on your own communication style and skills. Weight: 1-2. *Dyer and medical history staff*

CFM-274(C). The Ideal Patient. Who is the "ideal" patient? What about those who are not so ideal? This seminar will combine theory and practice. Information about 'difficult' personality types and effective interpersonal skills for dealing with these individuals will be integrated into actual practice. Members of the seminar will be asked to draw upon past and current experiences with difficult persons and situations as well as to focus on case presentations provided by the instructor. Weight: 1-2. *Puckett and staff*

CFM-299(C). Community and Family Medicine Preceptorships. A preceptorship will be arranged for students to work with family physicians in community practice sites. In this way students can observe and participate in the delivery of health care to individual patients and their families within the context of the community in which they live. A wide variety of geographic locations and practice types are available. Because of the necessity for prior arrangements with preceptors, it is essential that interested students contact the instructor as soon as possible and at least three months prior to the desired term. Weight: 4-9. *Michener and staff*

Medicine

James B. Duke Professor: Joseph C. Greenfield, Jr., M.D. (Emory, 1956); *Chairman*.

DIVISION OF ALLERGY, CRITICAL CARE, AND RESPIRATORY MEDICINE

Professor: James D. Crapo, M.D. (Rochester, 1971); *Chief*.

Professors: C. Edward Buckley, M.D. (Duke, 1954); Johannes A. Kylstra, M.D. (Univ. of Leiden, 1952); Harold R. Rotman, M.D. (Univ. of Toronto, 1958); Herbert A. Saltzman, M.D. (Jefferson, 1952); Herbert O. Sieker, M.D. (Washington Univ., 1948); Stephen L. Young, M.D. (California at San Francisco, 1968).

Visiting Professor of Medicine: Werner Hofmann, Ph.D. (University of Vienna, 1973).

Assistant Professors: William J. Fulkerson, M.D. (North Carolina at Chapel Hill, 1977); Douglas G. Kelling, M.D. (Harvard, 1972); Neil MacIntyre, M.D. (Cornell, 1972); John J. Murray, M.D. (Massachusetts, 1975); Claude Piantadosi, M.D. (Johns Hopkins, 1975); Wayne M. Samuelson, M.D. (Utah, 1980); Lyn A. Thet, M.D. (Inst. of Med., Burma, 1971).

Assistant Medical Research Professors: Ling-Yi Chang, Ph.D. (North Carolina State, 1982); Bruce Freeman, Ph.D. (California at Riverside, 1978); Ye-Shih Ho, Ph.D. (Carnegie Mellon, 1981); Robert R. Mercer, Ph.D. (North Carolina at Chapel Hill, 1982); Juan Vergara, M.D. (Univ. of Chile, 1952).

Associates in Medicine: Phillip J. Fracica, M.D. (New York, Downstate, 1981); Neil B. Hampson, M.D. (Washington, 1981); Manfred P. Mueller, M.D. (Indiana, 1982).

Medical Research Associate: Nelson Leatherman, Ph.D. (Michigan, 1967).

DIVISION OF CARDIOLOGY

James B. Duke Professor: Joseph C. Greenfield, M.D. (Emory, 1956); *Chief*.

Professors: Victor S. Behar, M.D. (Duke, 1961); Fred R. Cobb, M.D. (Mississippi, 1964); Walter L. Floyd, M.D. (Johns Hopkins, 1954); Joseph R. Kisslo, M.D. (Hahnemann, 1967); Yi-Hong Kong, M.D. (Nat'l. Defense Med. Ctr., Taiwan, 1958); James B. Duke Professor Robert J. Lefkowitz, M.D. (Columbia, 1966); James J. Morris, M.D. (State Univ. of New York, 1959); Robert H. Peter, M.D. (Duke, 1961); Eric Prystowsky, M.D. (Mt. Sinai, 1973); Walter Kempner Professor of Medicine Andrew G. Wallace, M.D. (Duke, 1959); Robert E. Whalen, M.D. (Cornell, 1956).

Associate Professors: Thomas M. Bashore, M.D. (Ohio, 1972); Augustus O. Grant, M.D. (Edinburgh, 1971); Barbara C. Newborg, M.D. (Johns Hopkins, 1949); Edward Pritchett, M.D. (Ohio, 1971); Robert A. Rosati, M.D. (Duke, 1967); Gary L. Stiles, M.D. (Vanderbilt, 1975); Harold C. Strauss, M.D. (McGill, 1964); Judith L. Swain, M.D. (California at San Diego, 1974); Galen S. Wagner, M.D. (Duke, 1965); Robert Waugh, M.D. (Pennsylvania, 1966); R. Sanders Williams, M.D. (Duke, 1974).

Associate Medical Research Professors: Judith C. Rembert, Ph.D. (North Carolina at Chapel Hill, 1972); William M. Smith, Ph.D. (Duke, 1970)

Assistant Professors: Robert M. Califf, M.D. (Duke, 1978); Lawrence D. German, M.D. (Boston, 1976); Michael B. Higginbotham, M.D. (Univ. of Melbourne, 1973); Mark A. Hlatky, M.D. (Pennsylvania, 1976); Kenneth G. Morris, M.D. (Ohio, 1972); Douglas L. Packer, M.D. (Utah, 1980); Harry R. Phillips, M.D. (Duke, 1975); David B. Pryor, M.D. (Michigan, 1976); Richard S. Stack, M.D. (Wayne State, 1976).

Assistant Medical Research Professor: Jack T. Cusma, Ph.D. (Wisconsin, 1983).

Associates: A. Alan Chu, M.D. (Duke, 1980); Stephen M. Denning, M.D. (Duke, 1980); Tomoaki Hinohara, M.D. (Keio Univ., 1975); Brian K. Kobilka, M.D. (Yale, 1981); Daniel Mark, M.D. (Tufts, 1978); Pamela B. Morris, M.D. (Duke, 1981); William O'Callaghan, M.D. (Univ. College, Dublin, 1977); Charles A. Simonton, M.D. (Harvard, 1980); Thomas N. Skelton, M.D. (Mississippi, 1981); Martin J. Sullivan, M.D. (Ohio State, 1980); Katherine A. Thompson, M.D. (Duke, 1980); J. Marcus Wharton, M.D. (Vanderbilt, 1980).

DIVISION OF CLINICAL PHARMACOLOGY

Professor: James E. Nidel, M.D. (Miami, 1973), *Chief*.

DIVISION OF DERMATOLOGY

Professor: Sheldon R. Pinnell, M.D. (Yale, 1963); *Chief*.

Associate Professor: Sheldon V. Pollack, M.D. (Toronto, 1974).

Assistant Professors: Claude S. Burton, M.D. (Duke, 1979); Russell P. Hall, M.D. (Missouri, 1975); John C. Murray, M.D. (Duke, 1977); Elise A. Olsen, M.D. (Baylor, 1978).

Associates: Virginia A. Lightner, M.D. (Duke, 1982); M. Joyce Rico, M.D. (Florida, 1981); Diane C. Subin, M.D. (Mt. Sinai, 1982).

Medical Research Associates: Douglas J. Darr, Ph.D. (Pennsylvania State, 1982); Saood Murad, Ph.D. (California at Davis, 1978).

DIVISION OF GASTROENTEROLOGY

Professor: Ian L. Taylor, M.B. (Liverpool School of Medicine, 1969), *Chief*.

Professors: Peter B. Cotton, M.B. (St. Thomas Hosp., 1963); Michael McLeod, M.D. (Duke, 1960); Malcolm P. Tyor, M.D. (Duke, 1946).

Associate Professors: John T. Garbutt, M.D. (Temple, 1962); Paul G. Killenberg, M.D. (Pennsylvania, 1963); Thomas T. Long, M.D. (Bowman Gray, 1966); Steven H. Quarfordt, M.D. (New York Univ., 1960); Joanne A. P. Wilson, M.D. (Duke, 1973).

Assistant Professors: Jacqueline C. Hijmans, M.D. (Univ. of Leiden, 1951); Toan D. Nguyen, M.D. (Chicago-Pritzker, 1978).

Associates: Peter E. Krims, M.D. (Boston, 1982); William S. Putnam, M.D. (Duke, 1980).

DIVISION OF GENERAL INTERNAL MEDICINE

Assistant Professor: Mark Linzer, M.D. (Johns Hopkins, 1977), *Chief*.

Professor: Charles E. Putman, M.D. (Texas at Galveston, 1967).

Associate Professor: Francis A. Neelon, M.D. (Harvard, 1962).

Assistant Professors: J. Trig Brown, M.D. (Washington Univ., 1977); G. Ralph Corey, M.D. (Baylor, 1973); Linda M. Frazier, M.D. (Mt. Sinai, 1980); Khin Mae Hla, M.D. (Inst. of Med., Burma, 1971).

Associates: W. Blair Brooks, M.D. (Dartmouth, 1979); John T. Kihm, M.D. (Wayne State, 1984); Julia E. McMurray, M.D. (North Carolina at Chapel Hill, 1979); David B. Matchar, M.D. (Maryland, 1980); Nancy M. Philips, M.D. (Dartmouth, 1979); Amy E. Saunders, M.D. (Ohio State, 1983); William C. Siegel, M.D. (Stanford, 1980); David L. Simel, M.D. (Duke, 1980).

DIVISION OF GERIATRICS

Professor: Harvey Jay Cohen, M.D. (SUNY, 1965); *Chief*.

Assistant Professors: Mark Currie, M.D. (Texas at Dallas, 1978); Noel D. List, M.D. (New York Downstate, 1965); Kenneth W. Lyles, M.D. (Med. Coll. of Virginia, 1974).

Assistant Medical Research Professors: Elizabeth Colerick, Ph.D. (Cornell, 1984); Trygve O. Tollefsbol, Ph.D. (North Texas State, 1982).

Associate: Stephanie A. Studenski, M.D. (Kansas, 1979).

Medical Research Associate: Lucille A. Bearon, Ph.D. (Duke, 1982).

DIVISION OF HEMATOLOGY-ONCOLOGY

Florence McAlister Professor: Wendell F. Rosse, M.D. (Chicago, 1958); *Codirector (Hematology)*.

Professor: Robert C. Bast, M.D. (Harvard, 1971); *Codirector (Oncology)*.

Professors: Andrew T. Huang, M.D. (Taiwan, 1965); Thomas F. Newcomb, M.D. (Pittsburgh, 1951); Harold R. Silberman, M.D. (Washington Univ., 1956).

Scholar In Residence: Joseph E. Sokal, M.D. (Yale, 1940).

Associate Professors: Arthur Frankel, M.D. (Illinois, 1979); Jon P. Gockerman, M.D. (Chicago, 1967); Russell Kaufman, M.D. (Ohio, 1973); Roger J. Kurlander, M.D. (Chicago, 1971); Joseph O. Moore, M.D. (Johns Hopkins, 1971); J. Brice Weinberg, M.D. (Arkansas, 1969).

Assistant Professors: B. Alton Brantley, M.D. (Duke, 1978); Theresa Blumfelder, M.D. (Missouri, 1973); Wayne Brenckman, M.D. (Yale, 1963); Jeffrey Crawford, M.D. (Ohio, 1974); Charles S. Greenberg, M.D. (Hahnemann, 1976); Yusuf A. Hannun, M.D. (American University of Beirut, 1981); James W. Hathorn, M.D. (Duke, 1979); Roy B. Jones, M.D. (Duke, 1975); William P. Peters, M.D. (Columbia, 1978); George Phillips, M.D. (Duke, 1978); David M. Schlossman, M.D. (Duke, 1979); Elizabeth Shpall, M.D. (Cincinnati, 1980); Marilyn J. Telen, M.D. (New York, 1977).

Assistant Medical Research Professors: Komandoor E. Achyuthan, Ph.D. (Osmania, 1982); Cinda M. Boyer, Ph.D. (Pennsylvania, 1980); Suramen Ramakrishnan, Ph.D. (All India Inst., 1969).

Associates: Cynthia Chua, M.D. (Duke, 1979); Lowell L. Hart, M.D. (New York at Syracuse, 1980); Pamela J. Honeycutt, M.D. (Duke, 1981); S. Spence McCachren, M.D. (Duke, 1978).

DIVISION OF INFECTIOUS DISEASES

Professor: David T. Durack, M.B., B.S. (West Australia, 1969); D.Phil. (Oxford, 1973); *Chief*.

Associate Professors: Charles Ellenbogen, M.D. (Chicago, 1964); Harry A. Gallis, M.D. (Duke, 1967); John D. Hamilton, M.D. (Colorado, 1964); Kenneth H. Wilson, M.D. (North Carolina at Chapel Hill, 1974).

Assistant Professors: Donald L. Granger, M.D. (Utah, 1972); Mary E. Klotman, M.D. (Duke, 1980); John R. Perfect, M.D. (Med. Coll. of Ohio, 1975).

Assistant Medical Research Professor: Dena L. Toffaletti, Ph.D. (North Carolina at Chapel Hill, 1977).

Associates: John A. Bartlett, M.D. (Virginia, 1981); Gunther J. Lallinger, M.D. (Ludwig, 1972).

DIVISION OF METABOLISM, ENDOCRINOLOGY, AND GENETICS

James B. Wyngaarden Clinical Professor of Medicine: Edward W. Holmes, M.D. (Pennsylvania, 1967); *Chief*.

Professors: Marc K. Drezner, M.D. (Pittsburgh, 1970); Harry T. McPherson, M.D. (Duke, 1948).

Associate Professors: Perry J. Blackshear, M.D. (Harvard, 1977); Warner M. Burch, M.D. (Bowman Gray, 1971); George J. Ellis, M.D. (Harvard, 1963); Mark N. Feinglos, M.D. (McGill, 1973); Jerome M. Feldman, M.D. (Northwestern, 1961); Charles Johnson, M.D. (Howard, 1963).

Assistant Professors: Frederick L. Dunn, M.D. (Illinois, 1974); Keith Parker, M.D. (Washington Univ., 1981).

Assistant Medical Research Professors: Bruce Lobaugh, Ph.D. (Pennsylvania State, 1981); Richard Sabina, Ph.D. (Texas A&M, 1979); Deborah J. Stumpo, Ph.D. (West Virginia, 1984).

Associate: Rita M. Willett, M.D. (Washington Univ., 1981).

DIVISION OF NEPHROLOGY

Professor: Vincent W. Dennis, M.D. (Georgetown, 1966); *Chief*.

Professors: James R. Clapp, M.D. (North Carolina at Chapel Hill, 1957); J. Caulie Gunnells, M.D. (South Carolina Med. Coll., 1956).

Associate Professors: Peter C. Brazy, M.D. (Washington Univ., 1972); William W. Stead, M.D. (Duke, 1973); William E. Yarger, M.D. (Baylor, 1963).

Assistant Professors: Thomas Coffman, M.D. (Ohio, 1980); Paul E. Klotman, M.D. (Indiana, 1976); L. Darryl Quarles, M.D. (Alabama, 1979); Steve J. Schwab, M.D. (Missouri, 1979); Ullrich Schwertschlag, M.D. (Univ. of Heidelberg, 1975); Laura P. Svetkey, M.D. (Harvard, 1979).

DIVISION OF NEUROLOGY

Professor: Allen D. Roses, M.D. (Pennsylvania, 1967); *Chief*.

Professors: James N. Davis, M.D. (Cornell, 1965); James O. McNamara, M.D. (Michigan, 1968); Donald B. Sanders, M.D. (Harvard, 1964).

Associate Professors: Barrie H. Hurwitz, M.D. (Witwatersrand Univ., 1968); E. Wayne Massey, M.D. (Texas at Galveston, 1970); S. Clifford Schold, M.D. (Arizona, 1973); Ara Tourian, M.D. (Iowa, 1958).

Assistant Professors: Andrew C. Bragdon, M.D. (Washington Univ., 1977); Christopher Clark, M.D. (Jefferson, 1973); Janice M. Massey, M.D. (Georgetown, 1978); Rodney A. Radtke, M.D. (Northwestern, 1980); Marvin Rozeat, M.D. (Duke, 1966); Donald Schmechel, M.D. (Harvard, 1974); Cheolsu Shin, M.D. (Alabama, 1977); Teepu Siddique, M.D. (Dow Med. Coll., 1973).

Assistant Medical Research Professors: Richard J. Bartlett, Ph.D. (Texas at Houston, 1979); Douglas Bonhaus, Ph.D. (Arizona, 1983); Sanjeev D. Nandedkar, Ph.D. (Virginia 1983); Margaret Pericak-Vance, Ph.D. (North Carolina at Chapel Hill, 1978).

Associates: Mark J. Alberts, M.D. (Tufts, 1982); Robert Albright, M.D. (Pennsylvania, 1979); Michael Bowman, M.D. (Ohio State, 1976); Nancy L. Earl, M.D. (North Carolina at Chapel Hill, 1982); Larry B. Goldstein, M.D. (Mt. Sinai, 1981); David A. Hosford, M.D. (Emory, 1983); Cynthia S. Payne, M.D. (Med. Coll. of Ohio, 1980); Charles R. Stewart, M.D. (Tulane, 1972).

Medical Research Associate: Douglas Bonhaus, Ph.D. (Arizona, 1983).

DIVISION OF RHEUMATOLOGY AND IMMUNOLOGY

Professor: Barton F. Haynes, M.D. (Baylor, 1973); *Chief*.

Professors: Warner C. Greene, M.D. (Washington Univ., 1977); Nicholas M. Kredich, M.D. (Michigan, 1962).

Associate Professors: David S. Caldwell, M.D. (Bowman Gray, 1967); Michael S. Hershfield, M.D. (Pennsylvania, 1967); David S. Pisetsky, M.D. (Albert Einstein, 1973); John R. Rice, M.D. (Miami, 1968).

Associate Medical Research Professor: Kay H. Singer, Ph.D. (Duke, 1977).

Assistant Professors: Nancy B. Allen, M.D. (Tufts, 1978); Deborah C. German, M.D. (Harvard, 1976); Richard P. Polisson, M.D. (Duke, 1976); E. William St. Clair, M.D. (West Virginia, 1980).

Assistant Medical Research Professors: Bryan R. Cullen, Ph.D. (New Jersey, 1984); Thomas J. Palker, Ph.D. (Connecticut, 1982).

Associate: C. Christine Cox, M.D. (North Carolina at Chapel Hill, 1980).

Medical Research Associate: Vickie Christenson, Ph.D. (Duke, 1982).

ADJUNCT FACULTY

Professor of Experimental Medicine: Pedro Cuatrecasas, M.D. (Washington, 1962).

Adjunct Professors of Medicine: David W. Barry, M.D. (Yale, 1969); A. Wallace Hayes, Ph.D. (Auburn, 1967); Russell G. McAllister, M.D. (Virginia, 1967); Ralph Snyderman, M.D. (New York, Downstate, 1965).

Adjunct Associate Professor of Experimental Medicine: S. Duk Lee, Ph.D. (Maryland, 1961).

Adjunct Associate Professor of Medicine: Thomas L. Wenger, M.D. (Boston, 1971).

Adjunct Assistant Professors of Medicine: Gary E. R. Hook, Ph.D. (Victoria, 1968); Richard Kent, M.D. (California at San Diego, 1975).

Adjunct Assistant Professor of Experimental Medicine: John J. O'Neil, Ph.D. (California at San Francisco, 1974).

Adjunct Associate in Medicine: Joan L. Drucker, M.D. (Virginia, 1980).

CONSULTING FACULTY

Consulting Professor: Robert A. Gutman, M.D. (Florida, 1962), Durham, NC.

Associate Consulting Professors: Robert S. Gilgor, M.D. (Pennsylvania, 1962), Chapel Hill, NC.; Harold L. Godwin, M.D. (Harvard, 1947), Fayetteville, NC; Bruce S. Ribner, M.D. (Harvard, 1970), Asheville, NC.

Assistant Consulting Professors: William S. Abernathy, M.D. (Columbia, 1969); Durham, NC; Syed Ahmed, M.D. (Dow Med. Coll., 1967), Danville, VA; John T. Baker, M.D. (Harvard, 1971), Durham, NC; Franc A. Barada,

M.D. (Virginia, 1971), Durham, NC; Robert A. Buchanan, M.D. (Bowman Gray, 1969), Durham, NC; Gary V. Burton, M.D. (Utah, 1978), Shreveport, LA; Edwin Cox, M.D. (Duke, 1971); Walter E. Davis, M.D. (Duke, 1966), Durham, NC; Lewis D. Elliston, M.D. (Baylor, 1969), Asheville, NC; Richard W. Evans, M.D. (Eastern Virginia, 1976), Asheville, NC; P. K. George, M.D. (All India Inst., 1969), Raleigh, NC; Marcel Gilbert, M.D. (Laval Univ., 1966) Quebec; James M. Gilchrist, M.D. (Loyola, 1979), Providence, RI; Albino Gomez-Uria, M.D. (Madrid Sch. of Med., 1962), Asheville, NC; Gloria F. Graham, M.D. (Bowman Gray, 1961), Wilson, NC; Michael C. Hindman, M.D. (Illinois, 1973), Durham, NC; H. LeRoy Izlar, M.D. (Duke, 1948), Durham, NC; Elizabeth Kanof, M.D. (New York Univ., 1960), Raleigh, NC; James R. Kelly, M.D. (Duke, 1970), Durham, NC; Thomas J. Maley, M.D. (New Jersey, 1970), Asheville, NC; D. Edmond Miller, M.D. (Duke, 1956), Durham, NC; Eva L. Morgenstein, M.D. (Connecticut, 1976), Asheville, NC; Frank S. Pancotto, M.D. (Chicago, 1975), Concord, NC; Jesse Roberts, M.D. (Louisiana, 1961), Winston-Salem, NC; Mehrdad M. Sahba, M.D. (Isfahan Faculty of Med., Iran, 1957), Durham, NC; John B. Simpson, M.D. (Duke, 1973), Woodside, CA; Abdolazim Vaezy, M.D. (Tehran University, 1969), Asheville, NC; Abe Walston, M.D. (Duke, 1963), Durham, NC; Edward S. Williams, M.D. (North Carolina at Chapel Hill, 1954), Durham, NC; James O. Wynn, M.D. (Cornell, 1951), Chapel Hill, NC.

Consulting Associates: Martha B. Adams, M.D. (Virginia, 1976), Durham, NC; Garrett Bressler, M.D. (Duke, 1978), Durham, NC; Louis L. Brunetti, M.D. (Mt. Sinai, 1983), Charlotte, NC; Paul S-C Chang, M.D. (Chicago, 1983), Asheville, NC; Alexander Chiamonti, M.D. (Michigan, 1976), Cary, NC; George W. Crane, M.D. (Northwestern, 1946), Durham, NC; Walter C. Fitzgerald, M.D. (Virginia, 1943), Danville, VA; Leon W. Geary, M.D. (Texas Tech., 1975), Durham, NC; Bonnie Goodwin, M.D. (Dartmouth, 1977), Pollacksville, NC; Robert B. Johnson, M.D. (Duke, 1978), Cary, NC; G. Wallace Kernodle, M.D. (North Carolina at Chapel Hill, 1981), Burlington, NC; Stanley Levy, M.D. (Georgetown, 1971), Durham, NC; Stuart H. Manning, M.D. (Duke, 1976), Durham, NC; Patricia M. Mauro, M.D. (Cornell, 1977), Durham, NC; Mark A. Powers, M.D. (Dartmouth, 1977), Durham, NC; Jack G. Robbins, M.D. (Duke, 1948), Durham, NC; Manfred Rothstein, M.D. (Duke, 1974), Fayetteville, NC; Michael B. Shipley, M.D. (Duke, 1974), Durham, NC; William V. Singletary, Jr., M.D. (Duke, 1975), Durham, NC; Robert B. Stewart, M.D., (West Virginia, 1974), Durham, NC; Raymond J. Toher, M.D., (Duke, 1976), Durham, NC; William F. Uthe, M.D., (Med. Coll. of Ohio, 1974), Durham, NC; Ann Elise Weinrich, M.D., (Med. Univ. of South Carolina, 1978), Durham, NC; William J. Wysor, M.D. (Virginia, 1950), Chapel Hill, NC.

CLINICAL FACULTY

Assistant Clinical Professors: B. Titus Allen, M.D. (Duke, 1966); John R. Feussner, M.D. (Vermont, 1973); Charles van der Horst, M.D. (Harvard, 1979).

Clinical Associate: Katherine Enright, M.D. (Duke, 1984).

Emeriti: J. Lamar Callaway, M.D.; Albert Heyman, M.D.; Walter Kempner, M.D.; Edward S. Orgain, M.D.; John B. Pfeiffer, M.D.; R. Wayne Rundles, M.D.; Eugene A. Stead, Jr., M.D.

Required Courses

MED-204. Introduction to Clinical Medicine: This course occurs over a seven week period in late summer following the completion of the first year basic science curriculum. It is short but intensive and designed to provide the student with the necessary skills and knowledge basic to function in a clinical environment. The three major areas that are covered include: (1) history, physical examination, problem formulation; (2) laboratory diagnosis, and (3) radiology diagnosis. In each of these three areas, didactic materials are presented in a morning lecture format and are complemented by afternoon sessions in smaller groups with "hands on" experience. The course also includes a brief introduction to the topic of human sexuality.

The morning lectures, in part, concentrate on various organ systems and outline the salient historical features of normality and disease as well as the physical examination features pertinent to the organ system. Two afternoons each week, the students break up into small groups and, interacting with one instructor, interview, examine, present, and write up patients from the wards at Duke and the VA Medical Center. During these patient oriented sessions, skills and techniques necessary for history taking, physical examination, bedside presentations, problem formulation, and writing up findings are introduced and practiced.

The purpose of the laboratory diagnosis portion of the course is to teach the concepts and technical skills necessary for the use of the laboratory in evaluating and managing patients. The course consists of a series of morning lectures and afternoon laboratory sessions stressing the intelligent use of the laboratory in clinical medicine and presented in a disease-oriented format. The lectures summarize difficult topics not easily gleaned from reading the background materials or handouts. The laboratory sessions are designed

to serve two purposes: to allow acquisition of the basic psychomotor laboratory skills needed routinely in clinical medicine, such as venipuncture, cell counting, performance of ECGs and microscopic examination of urine and blood; and to provide an opportunity for small instructor-led groups to discuss the basis of actual laboratory data to clinical practice.

The aim of the radiology diagnosis portion of the course is to introduce students to the radiographic appearances of common diseases that they will encounter during their clinical years. The principles rather than the details of radiographic interpretation are stressed in a series of morning lectures and afternoon laboratories sessions. In general, two lectures are devoted to each subspecialty area, e.g., chest radiology and neuroradiology, and these are usually scheduled to coincide with the corresponding lectures in physical and laboratory diagnosis. The laboratories are given to groups of fifteen to twenty students, and involve discussion of radiographs at the viewbox. The labs are generally designed to amplify and extend the content of the lecture material. The emphasis is on an informal discussion with considerable interaction of teacher and students. Most of the course material is related to the analysis of radiographs from the basic areas of radiology (chest, bone, gastrointestinal, urologic, and pediatric); with less emphasis on the more specialized areas (neuro, vascular, ultrasound, computed tomography, and nuclear medicine). Students will be expected to develop an understanding of how to analyze the common basic radiographic abnormalities that they will see during their second year clinical clerkships. The limited introduction to the more specialized areas provides information as to how the new imaging modalities should be applied in the diagnostic investigation of patients. The human sexuality portion of the course provides a didactic introduction to the psychological and physiologic aspects of sexual response and sexual dysfunction that are commonly encountered in clinical practice. The treatment of sexual dysfunction, with emphasis on behavioral methods, along with other approaches to marital and sexual dysfunction are also discussed. At the end of the course, the students are tested via a written and practical examination in radiology and laboratory medicine and both a written and practical examination on the history, physical examination, and problem formulations. Also contributing significantly to the final evaluation is individual student performance during the afternoon ward sessions.

MED-205. Medicine. The second year course in medicine is aimed at providing the student with the basic tools used in the practice of medicine. This is the time when he or she should consolidate the material learned during the first year and apply it to the study of his or her own patients. During a brief eight-week course it is not possible to cover systematically the entire body of knowledge of internal medicine; instead, the student is provided a series of representative learning experiences based on the case study method. Our goals are to teach a method of approach to the patient and to provide a firm foundation for the solution of new medical problems as they are encountered in the months and years ahead. Specific expectations of the sophomore student are: (1) The student will perform and record a history and physical examination on each patient he or she admits. The first two weeks on the rotation the student will admit one patient per week; thereafter he or she will admit three patients per week. (2) The student will perform an independent history and physical examination on the patient. After the resident has completed the patient assessment, the student should present to the resident. They should then go back to the bedside to check any discrepancies in either the historical or physical examination findings. The resident will review the workup and discuss the presentation of the patient with the student on the night of admission or at a time before formal patient presentation. (3) A complete work-up will also include an analysis of the peripheral blood smear and urine sediment on all patients. (4) The student should prepare for case presentations by reading the relevant section in one of the standard textbooks of medicine. (5) The student's complete workup should be in the chart within twenty-four hours of admission and should be in the format provided. (6) The student should take responsibility for patients as the primary care person and is expected

to follow his or her patients daily and include progress notes on the chart. He or she is responsible for knowing what therapeutic interventions and/or diagnostic tests have been performed and the outcome of these maneuvers. (7) The student is encouraged to participate in all diagnostic procedures, such as lumbar punctures or thoracenteses, on his or her patients. Where appropriate, the student will perform these procedures under the supervision of the house staff. (8) Daily work rounds with the house staff are mandatory and the student is expected to be sufficiently knowledgeable to participate in patient care decisions. Attending rounds cannot be missed without the prior permission of the attending physician. (9) The student is expected to present patients to attendings within twenty-four hours after admission and to know rationale for patient workup as well as pertinent specific medical information. (10) There will be an oral examination for all second year students during the final week of the rotation. The student will be expected to demonstrate skills in taking histories and performing physical examinations. (11) Students should attend all conferences (noon, etc.) unless ward duties preclude.

MED-207. Neurology. The second year course in neurology provides the student with a firm understanding of the neurological examination, formulation of clinical neurological problems, and practice with written and oral communications in a hospital setting. The student has the opportunity to apply the neuroanatomy, neurophysiology, neurochemistry, and neuropathology learned in the first year to the evaluation and care of his or her patients. Each student is assigned two patients in the first week and three patients in the last three weeks. The patients are drawn from the neurology services at Duke Hospital or the Durham VA Medical Center. The students elicit a history and perform a physical examination under the supervision of neurology faculty. The student records the findings in the hospital charts and presents the findings at regular staff rounds. The student then participates with a clinical team of faculty and house officers in the hospital evaluation of the patients. The student is encouraged to participate in all diagnostic procedures such as lumbar puncture. The student has the opportunity to follow patients through neuro-radiological and neuro-surgical procedures forming part of evaluation and treatment.

The specific expectations for the sophomore student are: (1) to perform and record a competent neurological and history examination on each admitted patient, (2) to be competent in the hospital management of neurological patients including diagnostic evaluations such as hematological and urine evaluations, lumbar puncture and appropriate electrical studies, (3) to assume responsibility as the primary care person for his or her patients, to include daily progress notes on hospital charts, and to be familiar with the results of all therapeutic interventions and diagnostic tests performed on his patients, (4) to participate in daily work rounds with an assigned team of house officers and faculty, (5) to be sufficiently knowledgeable to participate in patient care decisions, (6) to attend faculty attending rounds and to present his patients to faculty within twenty-four hours after admission, and (7) to participate in neurology service rounds and conferences during the course.

The course includes faculty lectures. A written evaluation is provided to the students by faculty and house staff. There is no examination.

Electives

MED-210(C). Advanced General Medicine: Duke/Durham Veterans Administration Medical Center. Course Goals: To expand the experience and knowledge gained during the second year medicine clerkship by: (1) Primary—Providing additional experience in the management of hospitalized patients with a wide variety of general internal medical problems. (2) Secondary—Developing a comprehensive understanding of the pathophysiology of the common problems encountered on an internal medicine inpatient service. This course is recommended for students who receive straight pass in MED 205. How Goals Will Be Achieved: Students will be assigned to one of the general

medical wards at either Duke or the Veterans Administration Medical Center. They will be assigned patients in rotation with the second-year students on the service and will be expected to perform and complete an initial evaluation, develop a care plan, write the orders (to be countersigned by the intern), present the patient at teaching rounds and follow the patient throughout the hospital course. Students will be assigned approximately three patients per week and will be expected to do outside reading on each. The student may be advanced to the subinternship level during the eight-week period on the recommendation of the chief medical resident. Methods of Evaluation: Students will be evaluated by their intern, resident, and senior staff attending. The evaluation form will be made available to each student at the beginning of the rotation. No final exam is given. Weight: 8. *Greenfield and staff*

MED-211(C). Internal Medicine Subinternship: Duke/Durham Veterans Administration Medical Center/ Durham County General Hospital. Course Goals: To provide an internal medicine patient care experience at the intern level. How Goals Will Be Achieved: Students will be assigned to one of the two inpatient services at either Duke, DVAMC, DCG hospitals supervised by a second or third year internal medicine resident. The student will function as an intern on that service with the exception that orders must be countersigned by a medical house officer. No other medical intern will be assigned to those patients handled by the subintern. The number of patients assigned will be determined by the supervising resident with anticipated increases during the four week period. Methods of Evaluation: Students will be evaluated by their resident and senior staff attending. The evaluation form will be made available to each student at the beginning of the rotation. No final exam is given. Prerequisite: available only to Duke medical students who receive honors or pass+ in MED-205. Weight: 4 or 8. *Greenfield and staff*

MED-212(C). Tutorial in General Internal Medicine. Course goals: (1) Primary—to expand exposure to general internal medicine. (2) Secondary—to focus and develop physician-patient interactive skills using private in- and outpatients. How Goals Will Be Achieved: Students will work in a one-to-one relationship with one of the faculty members of the Division of General Internal Medicine involved in the daily care of patients. Activities include working up and developing plans for evaluation and therapy as well as presenting inpatients and outpatients in the Medical PDC. This eight-week offers an expanded opportunity for exposure to general internal medicine problems. Methods of Evaluation: The preceptor will observe the student's interaction with patients and the quality of the work-ups including the follow-up care plans and their implications. Prerequisites: approval of the students by preceptor. Weight: 4. *Neelon and Feussner*

MED-213(C). Tutorial in Medical Private Diagnostic Clinic (MPDC). Course Goals: (1) Primary—to broaden student exposure to ambulatory care in internal medicine and understanding of outpatient evaluation of disease. (2) Secondary—to develop the student's doctoring skills by focusing on the physician-patient interactive skills using private or public outpatients. How Goals Will Be Achieved: Students will work in a one to one relationship with one of the faculty members in the Department of Medicine who sees patients regularly in the MPDC. Students will complete the initial work-up of patients and develop plans for treatment and follow-up care in consultation with the preceptor. They may follow patients admitted to the hospital. The student may choose to spend time in both the acute care clinic and seeing private patients with an attending of their choice. The patients may be general medical patients or patients within their attending's subspecialty. Students will also gain an understanding of the effectiveness of evaluation of patients on an outpatient basis. Methods of Evaluation: The preceptor will observe the student's interaction with patients and the quality of the work-ups including follow-up care plans and their implementation. Prerequisites: Approval of students by preceptor. Weight: 2-4. *Greenfield and staff*

MED-215(C). Combined Medical Specialties Unit Clerkship (CMSU). This eight week clerkship on the CMSU is designed to improve students' understanding of clinical

problems in psychosomatic medicine. Students will admit patients with housestaff and manage them through their hospitalization. Several lectures and conferences complement the clinical work. Course Goals: (1) Primary—to expand the student's knowledge of an experience with the understanding of clinical problems in psychosomatic medicine. (2) Secondary—to improve diagnostic and therapeutic interviewing skills. In addition it is expected that the student will develop a more effective use of the multidisciplinary (medicine, psychiatry, psychology) therapeutic interventions available in the CMSU setting. How Goals Will Be Achieved: Students will work with the CMSU ward team admitting patients on rotation every third night. The student will follow these patients throughout their hospitalization in close cooperation with the housestaff. Responsibilities will include initial evaluation and orders (countersigned by housestaff) as well as development of diagnostic and therapeutic plans in coordination with attending and housestaff. Regular didactic lectures on topics related to diagnosis and management of patients with psychosomatic problems will be given by attending staff. In addition, four conferences per week will be devoted to interviewing patients and the development of formulations and therapeutic plans. During this eight-week rotation, the student will be encouraged to become involved in depth with one or more of the therapeutic modalities frequently utilized on the CMSU. Methods of Evaluation: The preceptor and the housestaff will observe and evaluate the student's performance working with patients. Weight: 8. *Neelon, Finestone, and Brooks.*

MED-220(C). Emergency Room. Course Goals: (1) Primary—provide a broad exposure to the Emergency Room and to clinical problems, emphasizing acute internal medicine, in such a way that students can see patients before any other physician contact permitting the learner to make diagnoses and plan short-term work-ups. (2) Secondary—gain in ability to rapidly obtain history; shortening of time required to do accurate physical examination; enhancement of dexterity in performing minimally invasive procedures. How Goals Will Be Achieved: Each student works in rotation with nine different residents (not interns [three rotating shifts of three JARs]) and is on twenty-four hours/off twenty-four hours, then on twelve hours/off thirty-six hours. Students sleep in every fourth night and average working about seventy hours per week. In collaboration with the residents, or senior staff the student will be involved in diagnostic procedures and interpretation of studies before planning management of illness with some opportunities to supervise subsequent care for up to twenty-four hours. Thus, the students can test their ability to make diagnoses and plan acute studies. Didactic sessions, held twice weekly, cover clinical topics related to emergency medicine and complement a daily morning report. Students electing the eight-week rotation double their experience in acute care medicine including practice in interviewing/diagnostic skills as well as psychomotor coordination for procedures while working with several different resident teams. Methods of Evaluation of Student Performance: Residents and senior staff will evaluate the student's gain in rapidity of doing history/physical examinations, increased dexterity in performance of minimally invasive procedures, and increase in knowledge and skill to interpret/present data to others. Prerequisites: none are mandatory; prior experience in other electives will be beneficial. Weight: 4 or 8. *Silberman*

MED-223(C). Intensive Care Medicine Subinternship, Duke. Course Goals: (1) Primary—to introduce the student to a pathophysiologic approach to critically ill adults. (2) Secondary—to provide an opportunity for students to perform selected procedures. How Goals Will Be Achieved: Students will function as subinterns in a very active intensive care unit. Patient evaluations, procedures, diagnostic planning and treatment planning are performed by students under the direct supervision of the junior assistant resident, pulmonary fellow, and attending physician. Night call occurs every other or every third night. Regular didactic lectures on topics related to the diagnosis and treatment of the critically ill will be given by the attending staff. The physiological and biochemical approach to critical care medicine is stressed. Emphasis is placed on access

to attending physicians and pulmonary fellows for the discussion of specific patient-oriented questions. Preferences for the month of rotation will be honored if possible. Questions should be directed to Dr. Fulkerson, 681-5850. Methods of Evaluation: each student's performance is assessed by the unit director through direct observation of the student in the clinical and didactic environments. Input from the residents, fellows, and other attending physicians is also obtained. Weight: 4. *Fulkerson and pulmonary staff*

MED-224(C). Intensive Care Medicine Subinternship, Durham Veterans Administration Medical Center. Course Goals: (1) Primary—to provide training in clinical physiologic and pharmacologic principles of the care of the critically ill. (2) Secondary—to develop skill in performance and interpretation of diagnostic procedures. How Goals Will Be Achieved: Under the supervision of junior assistant residents and a pulmonary fellow, the student will function as a subintern and will be responsible for patient work-ups and daily bedside presentations. Students are given responsibilities for procedures and decision-making in direct proportion to the development of their patient management skills. Daily attending rounds stress an integrated physiologic approach to the management of critically ill patients with emphasis on acute respiratory care, hemodynamic monitoring, acid-base balance and nutritional support. Each student is provided with a syllabus of selected readings that supplements regular didactic sessions on diagnoses, pathophysiology, and management of critical illness. Student on call schedule is every third night for the duration of this four-week course. Students may obtain information by telephoning 286-6946 or 684-6143, and should arrange for a replacement if they subsequently drop the course. Methods of Evaluation: Student evaluations are done by the fellows and faculty attending on the MICU and are based on observed performance. Weight: 4. *Piantadosi and pulmonary staff*

MED-230(C). Pulmonary Medicine. Course Goals: (1) Primary—to provide training in clinical aspects of allergy and respiratory medicine. (2) Secondary—to provide experience with pulmonary and allergy laboratory techniques including pulmonary function testing, chest radiology, bronchoscopy and evaluation of allergic disorder. How Goals Will Be Achieved: Students will be assigned to the pulmonary/allergy consult services at either the Veterans Administration Medical Center or Duke Hospital. They will have primary responsibility for workup and presentation of selected patients on these services. All patients are presented and followed at daily rounds with fellows and faculty. Students will also participate in a half day outpatient clinic each week. Joint seminars and conferences involving both the Duke and VAMC consult services are held each week to provide instruction in allergy, clinical immunology, pulmonary function evaluation, pulmonary physiology, chest radiology, pulmonary pathology and clinical pulmonary medicine. Methods of Evaluation: Student evaluations are done by fellows and faculty assigned to the consult services during the period of the course and are based on observed performance. Weight: 4. *Crapo and pulmonary staff*

MED-231(C). Clinical Allergy-Immunology. Course Goals: (1) Primary—precepted instruction in the critical use of medical laboratory information. (2) Secondary—familiarization of the student with the clinical uses of the allergy-immunology laboratory. How Goals Will Be Achieved: The consultative role of the allergy-immunology laboratory is used to focus critical awareness on the clinical utility and pitfalls of measures of immunity. During the first several weeks the student will clinically evaluate selected patients with impaired immunity (impaired resistance to infection, hypersensitivity, auto-immunity, neoplasia, or other immunologic problems) from the clinic and/or consultative service. The student will have an opportunity to participate in the immunologic studies applicable to assigned patients. This clinical experience is used to identify a mutually acceptable topic for selected readings and weekly discussions of either a laboratory procedure or immunologic alterations associated with an immune disease. These readings and discussions provide the basis for a required technical report. The content of this short (ten to twenty double spaced typed pages, excluding references) critical report

of current knowledge is focused on the utility of either a specific laboratory procedure or the value of laboratory studies in the care of patients with a specific immune disease. Methods of Evaluation: the student's understanding and ability to use the information reviewed and the content of the technical report are used to evaluate student performance. Prerequisite: approval of the course director. Weight: 8. *C. E. Buckley*

MED-232(C). Pulmonary Medicine Subinternship (Asheville Veterans Administration Medical Center). Course Goals: (1) Primary—experience in management and assessment of pulmonary diseases. (2) Secondary—exposure to and assistance in special procedures in pulmonary medicine, such as PFTs, arterial punctures, thoracentesis and bronchoscopy. How Goals Will Be Achieved: Students will perform the initial work up on selected patients admitted to the pulmonary service at the Asheville Veterans Administration Medical Center and participate in patient centered daily work rounds and weekly chest conferences. In addition, there will be informal lectures on pulmonary subjects such as history taking, physical examination, PFTs and arterial blood gases (theory vs. practice), chest radiography, COPD and asthma, lung cancer, pneumonias, pulmonary TB, pulmonary emboli, occupational lung disease, respiratory failure, and pleural effusion. Optional activities may include participation in a pulmonary clinic and general medical night call. Method of Evaluation: The instructor evaluation will be based on observation of the student's daily performance using the standard Duke Department of Medicine evaluation form. Weight: 4. *Vaezy, Elliston, and Rotman*

MED-240(C). Clinical Cardiology. Course Goals: (1) Primary—to develop proficiency in obtaining and understanding the cardiovascular history and bedside examination and interpreting a routine electrocardiogram and chest X-ray. (2) Secondary—to develop an understanding of the pathophysiology of heart disease, the use of noninvasive (echo-Doppler, exercise testing, radionuclide imaging, ambulatory ECG monitoring) and invasive (cardiac catheterization and invasive electrophysiologic) technologies, data banking, and the role of the cardiovascular consultant in patient evaluation and treatment. How Goals Will Be Achieved: All students will have a core curriculum of didactic lectures and patient/cardiology patient simulator (HARVEY) teaching sessions occurring from 11 A.M. to 1 P.M. Monday through Friday, throughout the eight weeks. Students will also be assigned to work with HARVEY on their own in small groups at other times during the day. During the elective, students will be assigned to two sequential four-week patient centered experiences: a clinical evaluation subrotation, and a patient care subrotation. During the clinical evaluation subrotation, the student will be assigned to either Duke (consult service or electrophysiology service) or the VAMC and will be responsible for interpreting electrocardiograms, performing cardiology consultations, and evaluating patients in preparation for cardiac catheterization. During the other four-week experience, the students will be assigned to either Duke, VAMC, or DCG Coronary Care Unit, or to a private attending cardiologist as a subintern. On the CCU, the student will work in close cooperation with CCU staff and in the evaluation and management of patients with acute cardiovascular illnesses. As a subintern, the student will be responsible for evaluation and management of patients in concert with the intern, fellow, and senior staff physician. An opportunity to certify/recertify in basic cardiac life support will also be offered. Students wishing to drop this elective must do so at least two weeks prior to the starting date. Subsequently, no drop will be permitted unless the student provides a replacement for that slot. Methods of Evaluation: students will be evaluated by all residents and senior staff with whom they work. The evaluation questionnaire will be made available to the student at the beginning of the clerkship. At the end of the course, students will also be objectively evaluated by a written test and by a practical examination on HARVEY. Weight: 8. *Wagh and cardiology staff*

MED-241(C). Preventive Cardiology: Clinical Applications. Course Goals: (1) Primary—to teach students the clinical applications of newer knowledge of preventive cardiology. (2) Secondary—to teach students how to assess their own cardiovascular risk

status and means for its modification. **How Goals Will Be Achieved:** The course is given once every eight weeks and is organized around weekly didactic sessions and discussions of clinical cases. In addition, problem sets and a comprehensive reading list augment the classroom session. Several Duke faculty members as well as outside speakers from different clinical disciplines participate in the course. Some of the topics discussed include "risk factor" modification (such as clinical management of hyperlipidemia and hypertension, behavior modification, and smoking); secondary prevention by early diagnosis of coronary artery disease (CAD) using new technologies; tertiary prevention by maximum rehabilitation. Such issues as the pros and cons of surgical vs. medical approaches to CAD are examined not only in terms of scientific knowledge but also in economic terms. **Methods of Evaluation:** (1) quality of the student's classroom discussions demonstrating the extent of prior reading and (2) an examination. **Weight:** 1. *Morris and staff*

MED-242(C). Clinical Arrhythmia Service. Course goals: (1) Primary—to provide students with an indepth exposure to the diagnosis and management of cardiac arrhythmias, electrophysiologic studies, and cardiac pacemakers, and to allow them to understand the intracardiac events that result in ECG changes. This course is not designed to be a substitute for the general cardiology elective (240C). (2) Secondary—to familiarize the student with certain basic techniques of arrhythmia diagnosis such as esophageal recording and pacing. **How Goals Will Be Achieved:** The student will spend four weeks working on the clinical arrhythmia service. The student will make rounds with the clinical electrophysiology service on inpatients with arrhythmia problems. The student will attend electrophysiologic studies and assist in the analysis of data from these studies. The student will be responsible for the work-up of patients admitted to the arrhythmia service as well as inpatient consults, and will play an important role in the followup of these patients while they are in the hospital. The student will also see outpatients during arrhythmia clinic that meets Friday mornings in the PDC. The student will assist in the evaluation of patients for permanent pacemaker implantations. Students will be responsible for reviewing the literature on subjects related to the patients that they have seen on the clinical service. **Methods of Evaluation:** Students will be evaluated on their clinical skills in taking histories, performing physical examinations, as well as in their presentation and assessment of the patient's problem. They will also be assessed on their ability to read and understand the relevant literature, and they will be assessed on their ability to assume a responsible role in the operation of the clinical arrhythmia service. **Weight** 4. *Prystowsky, German, Packer, and Wharton*

MED-243(C). Cardiology Subinternship (Asheville Veterans Administration Medical Center). Course Goals: Primary—to provide experience in the assessment and management of patients with acquired heart disease. Secondary—the familiarization of the student with both invasive and non-invasive procedures available at this medical center. **How Goals Will Be Achieved:** The student will be assigned to an attending cardiologist and be expected to workup patients presenting to both the coronary care unit and the cardiology nonacute ward. Daily work rounds will commence at 7:30 A.M. with teaching rounds beginning at 3:30 P.M. on Monday, Wednesday and Friday. In addition, daily interpretation of electrocardiograms, stress tests, Holter monitors and echocardiograms will focus on student teaching. Cardiac catheterization results will also be reviewed on a daily basis as well as summarized in a weekly cardiac surgery conference. Night call will be optional, but students may elect to take call with appropriate attendings. **Method of Evaluation:** The preceptor will evaluate the student's ability to assess patient problems based on the history and physical and formulate a plan to evaluate the problems. Furthermore, the preceptor will assess each student's ability to evaluate and act upon data derived from both invasive and noninvasive diagnostic methods. **Weight:** 4. *Miller and O'Callaghan*

MED-250(C). Clinical Dermatology. The purpose of this course is to train the student to notice and recognize both crucial, as well as trivial, dermatological physical findings so that the student may be able in the future to: (1) describe physical findings in the skin accurately; (2) formulate a reasonable differential diagnosis based on what the student sees; (3) know when biopsy or referral is indicated; (4) prescribe appropriate therapy. The skin mirrors the health of the individual. Important clues to significant health problems are frequently overlooked by the uninitiated. Frequently a mere look at the patient by an experienced diagnostician is more fruitful (and far more cost effective) than any battery of diagnostic studies. Sherlock Holmes said it well, speaking to Watson, who was once again amazed at the insight of Mr. Holmes: "I see no more than you do, but I have trained myself to notice what I see". We hope to train the student to notice what he or she sees. Students on the rotation will spend two weeks in the Duke clinics and two weeks at the Veterans Administration Medical Center. While at Duke students will rotate through private dermatology clinics, public dermatology clinics, dermatologic surgery clinics, and various sub-specialty clinics. At the VAMC, there will be two major outpatient clinics each week supplemented by daily acute care clinic/screening clinic/ER walk-in consultations. Students will also participate in the inpatient consult service at the VAMC and will assist in supervising care of inpatient dermatology patients. There is no night call or weekend call on the rotation. The visual experience of the clinic is supplemented with canned lectures and teaching conferences. The most interesting cases from the VAMC experience are presented weekly at a Thursday morning breakfast conference. The most interesting cases from the Duke experience are presented weekly during Friday afternoon Gallop Rounds. Dr. Callaway, our Emeritus Professor, hosts a luncheon/slide show every Wednesday and the ward attending discusses various aspects of dermatology in detail at a Tuesday morning conference. The majority of the teaching is one-on-one. Student evaluations are based on subjective responses of faculty and residents. Enthusiasm is strongly rewarded. A brief objective examination is given at the end of the course that will not adversely affect (but may improve) the final grade and is intended chiefly to provide feedback to the course director. The course design changes frequently. The student is urged to discuss any special needs, desires, or conflicts with the course director, who may be reached at 684-5037. Please report to the dermatology clinic, room 0227, orange zone at 0830 the first day of the rotation for further orientation and clinic assignments. Weight: 4. *Burton*

MED-251(C). Lectures and Demonstration in Clinical Dermatology. Course Goals: The primary goal is to become familiar with the clinical presentation and pathophysiology of dermatological disorders and their management and treatment. How Goals Will Be Achieved: The course will be presented over an eight week period with three lectures weekly, using 35mm. Kodachromes. Clinical assessment will be emphasized by presentation of patients with common, as well as unusual, skin disorders one half day per week. Methods of Evaluation: a test given at the end of the course will be used to assess knowledge gained from lectures and attendance at clinical presentations is required. Weight: 2. *Olsen and dermatology staff*

MED-260(C). Gastroenterology. Course Goals: (1) Primary—to provide experience with digestive diseases from which the student can develop a sound fundamental approach to the diagnosis and management of these problems and to enable scholarly growth from subsequent experience. (2) Secondary—to provide an environment that will stimulate questions concerning digestive diseases and attract students with a research interest into the field. How Goals Will Be Achieved: Participation in the care (work-up and management) of patients hospitalized on the general wards of Duke or VA Medical Centers or on the gastroenterology unit at Duke South under the guidance of the resident and fellowship staff and under the direction of faculty members assigned either to the VAMC Consultation Service, Duke South Inpatient Service, or Duke Consultation Services. The students' experience may include direct participation in the activities

of the clinical laboratory of the Division of Gastroenterology. This laboratory offers specialized tests and/or procedures necessary for the state of the art care of patients with digestive diseases; for example, biochemical tests include measurements of gastric secretion and analysis of dietary fat absorption, immunoassays include measurements of serum gastrin and trypsin. Procedural activities range from upper endoscopy and endoscopic retrograde cholangiopancreatography to endoscopic colon polypectomy and endoscopic ampulla of Vater papillotomy. Morphologic and physiologic data derived from these and other laboratory studies are discussed in the context of specific patient problems in several weekly rounding and conference settings. Students have an opportunity to interact with all the faculty of the division at morning rounds and other conferences where patients from all of the services (Duke and VAMC) are discussed. Rounds on patients with liver disease are held separately. Methods of Evaluation: Student evaluation forms are completed by the resident, fellows and faculty working with the student on individual patient care services. Final evaluation represents a composite of these forms that chiefly identify clinical skills, fund of basic information, organizational ability and degree of interest and participation. Weight: 4. *Taylor and gastroenterology staff*

MED-270(C). Outpatient Hematology-Oncology (Duke). Course Goals: The primary goal is to give the student experience in the diagnosis, long-term treatment, and supportive care of patients with hematologic and oncologic disorders in the outpatient setting. How Goals Will Be Achieved: On one half day each week the student will see and take part in the care of patients with these disorders under the supervision of staff personnel. (The course is offered over eight or preferably sixteen weeks.) Methods of Evaluation: Students will be evaluated by their preceptors on the basis of their ability to obtain a history, perform a physical examination, evaluate hematologic and other laboratory data, integrate these data, and propose assessments and plans of action. Weight: 1-2. *Rosse, Bast, and hematology/oncology staff*

MED-271(C). Outpatient Hematology-Oncology (Durham Veterans Administration Medical Center). Course Goals: The primary goal is to give the student experience in the diagnosis, long-term treatment and supportive care of patients with hematologic and oncologic disorders in the outpatient setting. How Goals Will Be Achieved: On one-half day each week, the student will see and take part in the care of patients with hematological and oncological diseases in the outpatient setting. (The course is offered over eight or preferably sixteen weeks.) Methods of Evaluation: Students will be evaluated by their preceptors on the basis of their ability to obtain a history, perform a physical examination, evaluate hematologic and other laboratory data, integrate these data and propose assessments and plans of action. Weight: 1-2. *Weinberg and hematology/oncology staff*

MED-272(C). Clinical Hematology and Oncology (Duke). Course Goals: The primary goal is teaching the diagnosis and treatment of patients with hematologic and oncologic diseases. How Goals Will Be Achieved: Patient contact is stressed in various roles including those as outpatient, inpatient, and consultant physician. The diagnostic techniques used in assessing hematologic and oncologic diseases are stressed and the basic understanding of the pathophysiology of hematologic and oncologic diseases is provided. Two types of experience are offered: (1) the Consult Service in which the student sees the patient in consult on Wards 81-83 and reviews the diagnostic and therapeutic data with a consultant and (2) the Private Inpatient Service in which the student takes part in the care of the patients of one of the private physicians. Outpatient experience is provided for both types of experience. Four week students may select either experience while those electing an eight week rotation will have both types of experiences. Methods of Evaluation: Students will be evaluated by their preceptors on the basis of their ability to take a history, perform a physical examination, evaluate hematologic and other laboratory data, integrate these data, and propose assessments and plans of action. Weight: 4 or 8. *Rosse and hematology/oncology staff*

MED-273(C). Clinical Hematology and Oncology (Durham Veterans Administration Medical Center). Course Goals: The primary goal is teaching the diagnosis and treatment of patients with hematologic and oncologic diseases. How Goals Will Be Achieved: As a member of the section, the student actively participates in the following: (1) hematology-oncology consultation service for the VAMC wards, (2) hematology-oncology outpatient clinics, (3) management of disorders including leukemias, lymphomas, anemias, bleeding disorders, gammopathies, etc. An opportunity is provided for the student to learn and perform the specialized clinical and laboratory techniques involved in the evaluation of these patients. Ample time is available for contact with the hematology staff and library research. Students electing an eight week experience will function as subinterns for the second four weeks with a commensurate increase in responsibilities and duties in both the inpatient and outpatient arenas. Methods of Evaluation: Students will be evaluated by their preceptors on the basis of their ability to obtain a history, perform a physical examination, evaluate hematologic and other laboratory data, integrate these data, and propose assessments and plans of action. Weight: 4 or 8. *Weinberg and hematology staff*

MED-274(C). Medical Subinternship in Hematology-Oncology. Course Goals: This is an intensive course in the medical care of patients with hematologic and oncologic disorders. How Goals Will Be Achieved: The student will be given considerable responsibility, under supervision, in the care of inpatients either in Duke North or on Jordan Ward. They will receive instruction and experience in diagnostic and therapeutic procedures, the pathophysiology of the diseases in question, and the use of drugs and their interactions and the interactions of patients and their families. Methods of Evaluation: Students will be evaluated by their preceptors on the basis of their ability to obtain a history, perform a physical examination, evaluate hematologic and other laboratory data, integrate these data, and propose assessments and plans of action. Prerequisite: approval of faculty based on prior performance. Weight: 4. *Rosse and hematology/oncology staff*

MED-275(C). Clinical Coagulation. Course Goals: (1) to familiarize students with coagulation laboratory testing and their application to clinical problems. (2) to give students in-depth exposure to clinical coagulation disorders, and to acquaint students with recent advances in the area of coagulation research. How Goals Will Be Achieved: The student will spend four weeks working directly with Dr. Charles Greenberg, Director of the Coagulation Lab. Each morning the student will meet for one-half hour and discuss an important topic in clinical coagulation. Then students will review the abnormal results from the coagulation laboratory worksheet and make rounds on selected patients. The student will be expected to work up each patient referred to the coagulation service. A clinical coagulation conference will be held every other week and the student will present at least one case. A clinical research project will be given to every student that will teach them how to critically evaluate laboratory tests. Students electing an eight-week rotation will have a more extensive research experience. Methods of Evaluation: Will be based upon observation of ability to take careful histories and physical examinations; by clinical presentations and assessments; by demonstrating increase in knowledge about laboratory tests and their application to clinical problems. Weight: 4 or 8. *Greenberg*

MED-276(C). Oncology Subinternship (Asheville Veterans Administration Medical Center). Course Goals: To provide the student with a broad experience in the medical management of oncology patients including initial diagnostic evaluation, planning and monitoring of therapy and supportive care. Nonmalignant hematologic problems (mainly anemia and coagulopathy) will also be covered. How Goals Will Be Achieved: The student will do admission work ups, write orders and serve as the primary care provider for selected oncology patients under the supervision of the Chief of Oncology, Asheville Veterans Administration Medical Center. Didactic sessions will be provided by medical and nursing staff on various aspects of cancer and its treatment and compli-

cations. The student will participate in the biweekly oncology clinic and evaluate inpatients with anemia or coagulopathy on a consultative basis under staff supervision. Method of Evaluation: Chief of Oncology Service will evaluate student with standard Duke Department of Medicine evaluation forms. Weight: 4. *Chang and Walder*

MED-280(C). Clinical Infectious Diseases. Course Goals: To provide experience in the clinical and laboratory diagnoses of infectious diseases and in their therapy. The primary emphasis will be placed on learning from interaction with patients, resident staff and faculty on the consultation service. Students are expected to work up assigned patients by interviews, physical examination, and collation of laboratory results, leading to a summary and synthesis of the problem. Particular emphasis will be placed on close follow-up of the patients during hospitalization, including attendance at procedures or operations whenever possible. Students should know their own patients well enough to be able to give a reasonable presentation on ward rounds or at conferences without notice. Students will be expected to read in-depth standard texts about their patients' problems, including a few recent relevant primary references. Students are expected to attend the various conferences listed on the weekly schedule of division activities punctually, including microbiology plate rounds, Journal Club, and tutorials. They will be asked to present cases and provide some discussion at the Thursday VAMC conference, and to present cases as requested by Dr. Osterhout at his teaching conferences (MIC-339B). Each student should be prepared to present and briefly discuss one article that he or she considers to be interesting and timely at Journal Club. Methods of Evaluation: Each student's performance will be evaluated and graded by the resident, fellow and attendings using the usual "honors," "pass plus," "pass," "deferred," or "unsatisfactory" system. In arriving at a consensus, appropriate emphasis will be placed on knowledge, enthusiasm, and evidence of improvement during the rotation. There will be no written examination. No other courses are to be taken in conjunction with MED-280(C). Adds will be accepted at any time providing the course has not been filled. Because this course is usually oversubscribed, drops will not be accepted within thirty days of the first day of classes unless the student finds his own replacement. Weight: 4. *Durack and infectious disease staff*

MED-281(C). Infectious Diseases Subinternship (Asheville Veterans Administration Medical Center). Course Goals: Familiarizing students with the methods for diagnosing and managing patients with a wide variety of infectious diseases and allowing students to participate in basic techniques used to evaluate clinical specimens in the Clinical Microbiology Laboratory. How Goals Will Be Achieved: By allowing students to become involved in the initial evaluation of patients referred for infectious disease consultation and by discussing their diagnostic and management concepts with the course director. Students will also have a daily exposure to the Clinical Microbiology Laboratory where the basic techniques will be demonstrated and relevant culture material will be reviewed. Students will be provided with appropriate reference material and will be expected to refer to these sources regularly. Each student will also have several opportunities during the rotation to prepare and present more in-depth discussions on particular cases or problems they have evaluated. The course director will also provide at least weekly conferences to the student group on relevant subject matter. Method of Evaluation: Student performance will be assessed by the course director based on the student's fund of medical knowledge, ability to carry out an appropriate physical examination, ability to construct an appropriate differential diagnosis, ability to plan a clinical evaluation and arrive at a reasonable plan for management and ability to related to patients and colleagues. Weight: 4. *Ribner and staff*

MED-290(C). Metabolism and Endocrinology. Course Goals: (1) Primary—the student will have an in-depth experience in evaluation and management of patients with endocrine disorders. (2) Secondary—The student will learn basic principles of hormone physiology and apply these concepts in clinical settings. How Goals Will Be Achieved:

Each student will be introduced to patient problems by working with a faculty preceptor (Drs. Burch, Dunn, Ellis, Feinglos, Johnson, McPherson, or Willett). Prior arrangements may be made with a particular faculty member or students may be assigned to a preceptor at the beginning of the rotation. Each student will be exposed to clinical endocrine disorders by seeing patients on the inpatient endocrine service, the inpatient consult service and in the outpatient clinics. The student will have the opportunity to explore through reading and conferences the mechanism of hormone production and the physiologic consequences of hormone interaction with target tissues. Division conferences including grand rounds, journal club, research seminar, inpatient attending rounds and consult rounds provide the opportunity to integrate basic concepts with clinical applications. Methods of Evaluation: A written critique will be provided by the student's preceptor and comments will be sought from other members of the division. Weight: 4. *Willett and endocrinology staff*

MED-293(C). Diabetes Mellitus Subinternship (Asheville Veterans Administration Medical Center). Course Goals: (1) Primary—to provide the student with an indepth experience in the management of patients with diabetes mellitus and its complications. (2) Secondary—to teach the student the physiology of insulin and counter-regulatory hormones and intermediate carbohydrate metabolism. To provide the student with an understanding of the pathophysiology of diabetes mellitus and its complications. How Goals Will Be Achieved: The student will work up and write the orders on the patients with diabetes admitted to the endocrine section at AVAMC. The student will also participate in the diabetes clinic held four times weekly at the outpatient department at the AVAMC. Daily rounds and outpatient work will be supervised by the chief of endocrinology at AVAMC. In addition, the student will participate in the care of diabetic retinopathy at the general ophthalmology and retinal clinics, supervised by ophthalmology staff (examination, laser beam therapy, etc.). The student will participate in the diabetic training program. Method of Evaluation: Chief of Endocrinology will evaluate the student with standard Duke Department of Medicine student evaluation forms. Weight: 4. *Gomez-Uria, Gamblin and Cherpak*

MED-300(C). Nephrology. Course Goals: (1) Primary—to provide clinical experience in the diagnosis, assessment, and treatment of renal diseases and hypertension. (2) Secondary—to integrate renal physiology, immunology, pathology, and biochemistry into the clinical assessment of renal diseases. How Goals will be Achieved: Students participate fully in both inpatient and outpatient assessment of patients presenting with fluid and electrolytes disorders, problem hypertension, acute renal failure, end-stage renal disease and related complications. The student rounds daily with a renal fellow or senior resident, attends thrice weekly faculty teaching rounds and attends regularly scheduled conferences devoted to correlations with basic science, review of renal biopsy material, transplantation, etc. Special emphasis is placed on renal physiology and pathophysiology, renal histopathology, and hypertension. Students may elect to participate at the VA Medical Center or on the private or nonprivate services at Duke. Methods of Evaluation: Written comments from the faculty. Weight: 4. *Dennis and the nephrology staff*

MED-301(C). Fluids and Electrolytes. Course Goals: (1) Primary—to provide an applied approach to the management of fluid and electrolyte problems encountered in clinical medicine. To do this, cases are presented as problem-solving examples. The goal is to develop a systematic approach to the analysis of specific electrolyte derangements and to the correct selection of appropriate intravenous replacement therapy. These case studies are interwoven with a series of lectures designed to review specific areas such as compartmentalization of body fluids, derangements in acid-base balance, diuretic selection and use, analysis and approach to the treatment of potassium problems, etc. (2) Secondary—to integrate basic renal physiology with clinical problems of fluid and electrolytes metabolism. How Goals Will Be Achieved: Classroom experience. Does not

involve patient exposure. Methods of Evaluation: Final exam. Weight: 2. *Dennis and nephrology staff*

MED-310(C). Neurology Clerkship. Course Goals: To provide a neurological patient care experience at the intern level. Students will have the opportunity to apply neurological examination skills learned in the second year to direct patient care situations. Students will be exposed to a variety of neurological problems, procedures and therapies. This course is recommended for the student interested in neurology, psychiatry, internal medicine, neurosurgery, neuropathology or ophthalmology or those students wishing to supplement experience in MED 207 (Neurology Clerkship) or MED 211(C) (Internal Medicine Subinternship). Students may combine MED 211(C) with this course to provide advanced clinical training in internal medicine with an emphasis on neurology. How Goals will be Achieved: Students are assigned to the Durham Veterans Administration Medical Center neurology ward and take call in rotation with a medical intern as part of a patient care team. Students attend neurology-neurosurgery grand rounds, medicine grand rounds, neuropathology conferences and participate in all VAMC ward activities. Full time participation is expected. Methods of Evaluation: Resident and staff physician provide a written evaluation and grade. Weight: 4. *Davis and neurology staff*

MED-320(C). Rheumatic and Immunological Diseases. Course Goals: (1) Primary—to provide the student with experience in the recognition and care of patients with inflammatory disease, immunologic disease, arthritides connective tissue disease, and metabolic arthropathies. (2) Secondary—to have the student become acquainted with the specialized laboratory and clinical techniques relating to the evaluation of patients with rheumatic, immunologic, and metabolic disorders affecting connective tissue. Joint aspiration, evaluation of immunological testing, synovial fluid analysis, bone and joint radiology, and histopathological analysis of tissue biopsies will be studied. How Goals Will Be Achieved: Students will evaluate patients at the Duke and Durham VA Medical Center. Daily rounds are held with the faculty where patients are presented and reviewed in detail. Journal clubs precede rounds four times a week. Basic science conferences, bone and joint radiology conferences, pathology conferences and rheumatology/immunology grand rounds are held at regular weekly intervals. A comprehensive approach to the evaluation and treatment of patients with inflammatory, immune deficiency, and certain metabolic disorders is emphasized. Students are assigned primary responsibilities either on the inpatient service or the consultation service at the Duke or Durham VA Medical Centers. In addition to their patient responsibilities, students are assigned to ambulatory care clinics and participate in all the scheduled functions of the division. Methods of Evaluation: Students' evaluations are based on their patient presentations, their participation in discussions on rounds and in conferences, and their presentation at journal clubs. Prerequisite: No other courses are to be taken in conjunction with Medicine 320(C). Weight: 4. *Haynes and rheumatology/immunology staff*

MED-321(C). Rheumatology. Course Goals: An introductory course in clinical rheumatology designed to introduce students to the basics of differential diagnosis in the rheumatic diseases and to provide more detailed knowledge of the more common and major groups of rheumatic diseases. How Goals Will Be Achieved: This is primarily a lecture course. Use of patient materials will be limited. Methods of Evaluation: Written examination. Weight: 1. *Rice and invited lecturers*

MED-330(C). Tutorial in Medical Decision Making and Cost Analysis. Course Goals: (1) Primary—to learn how to interpret often contradictory evidence from the medical literature; to learn how to take cost into consideration when planning diagnostic evaluations and treatment. (2) Secondary—to learn how to apply results of clinical research to individual patients. How Goals Will Be Achieved: Formal decision analysis methods suitable for studying common patient care dilemmas will be described in a weekly didactic session. Students will then apply these techniques to a problem of their own choosing.

They will then work through this project under the guidance of their instructor. Emphasis will be on projects that can be completed during the sixteen-week time period. Completed projects will be potentially publishable, but this is not required. Time commitment will average four to six hours per week. Methods of Evaluation: Student evaluation will be by a combination of written examination and assessment by the instructor(s). Weight: 2. *Frazier and Linzer*

MED-400(C). Geriatric Medicine. Course Goals: (1) Primary—become familiar with the principles of caring for the geriatric patient. (2) Secondary—become familiar with the physiology and diseases of aging. How Goals Will Be Achieved: This elective is offered by the interdepartmental faculty of the Division of Geriatric Medicine. The student will work with faculty, fellows, and house staff in number of settings involved in the care of the geriatric patient. These will include the Geriatrics Evaluation and Treatment Clinic (Duke), Geriatric Evaluation Unit and Clinic (VAMC), geriatric consultation services (VAMC, DCG, Duke), nursing home facilities, interactions with community services (Coordinating Council for Senior Citizens), home assessment, and other. Principles to be stressed will be biology and pathophysiology of aging, multiple clinical problems in the elderly, interdisciplinary team approach to evaluation, planning and treatment; goals of maximal functional achievement and independence for the elderly. The student will participate actively in the work-up and management of patients in both inpatient and outpatient settings as well as become more familiar with the problems of the elderly in the community. Familiarity with the growing literature in geriatric medicine will be encouraged and the student will participate in seminars, lectures, and team meetings at the appropriate sites including the Duke Center for the Study of Aging. Methods of Evaluation: Evaluation will be by consensus of instructors and fellows at the various training sites. It will be based on discussions and presentations throughout the course period. Prerequisite: approval of course director. Weight: 4. *Cohen and gerontology staff*

Microbiology and Immunology

James B. Duke Professor: Wolfgang K. Joklik, D. Phil. (Oxford, 1952), *Chairman*.

James B. Duke Professor: D. Bernard Amos, M.D. (Guy's Hospital, London 1963).

Professors: Robert C. Bast, Jr., M.D. (Harvard, 1971); Deepak Bastia, Ph.D. (Chicago, 1971); Dani P. Bolognesi, Ph.D. (Duke, 1967); Rebecca H. Buckley, M.D. (North Carolina at Chapel Hill, 1958); Peter Cresswell, Ph.D. (London, 1971); Eugene D. Day, Ph.D. (Delaware, 1952); David T. Durack, D.Phil. (Oxford, 1973); Richard S. Metzgar, Ph.D. (Buffalo, 1959); Joseph R. Nevins, Ph.D. (Duke, 1976); Suydam Osterhout, M.D. (Duke, 1949), Ph.D. (Rockefeller Inst., 1959); Wendell F. Rosse, M.D. (Chicago, 1958); Hillard F. Seigler, M.D. (North Carolina at Chapel Hill, 1960); Frances E. Ward, Ph.D. (Brown, 1965); Robert W. Wheat, Ph.D. (Washington Univ., 1955); Catherine M. Wilfert, M.D. (Harvard, 1962); Hilda P. Willett, Ph.D. (Duke, 1949).

Visiting Professor: Nicholas C. Palczuk, Ph.D. (Pennsylvania, 1958).

Adjunct Professors: James J. Burchall, Ph.D. (Illinois, 1963); David W. Scott, Ph.D. (Yale, 1969); Norman F. Weatherly, Ph.D. (Kansas, 1962).

Associate Professors: Dolph O. Adams, M.D. (Med. Coll. of Georgia, 1965); Ralph Randall Bollinger, M.D. (Tulane, 1970); Ronald B. Corley, Ph.D. (Duke, 1975); Jeffrey Dawson, Ph.D. (Case Western Reserve, 1969); Sharyn A. Endow, Ph.D. (Yale, 1975); Warner C. Greene, M.D., Ph.D. (Washington Univ., 1977); John D. Hamilton, M.D. (Colorado, 1964); Barton F. Haynes, M.D. (Baylor, 1973); Gale B. Hill, Ph.D. (Duke, 1966); Jack D. Keene, Ph.D. (Washington, 1974); Dolph Klein, Ph.D. (Rutgers, 1961); Elwood A. Linney, Ph.D. (California at San Diego, 1973); David R. McClay, Jr., Ph.D. (North Carolina at Chapel Hill, 1971); Thomas G. Mitchell, Ph.D. (Tulane, 1971); Joan V. Ruderman, Ph.D. (Massachusetts Inst. of Tech., 1974); Harvey J. Sage, Ph.D. (Yale, 1958); Peter Zwadyk, Jr., Ph.D. (Iowa, 1971).

Associate Medical Research Professors: Andrew E. Balber, Ph.D. (Rockefeller, 1971); Sara E. Miller, Ph.D. (Georgia, 1972).

Adjunct Associate Professors: Jeffrey J. Collins, Ph.D. (Harvard, 1972); Lorraine Flaherty, Ph.D. (Cornell, 1973); Hillel S. Korean, Ph.D. (Harvard, 1972).

Assistant Professors: Yair Argon, Ph.D. (Harvard, 1979); Charles E. Buckley III, M.D. (Duke, 1954); Olivera J. Finn, Ph.D. (Stanford, 1980); Harry A. Gallis, M.D. (Duke, 1967); Donald L. Granger, M.D. (Utah, 1972); Kenneth N. Kreuzer, Ph.D. (Chicago, 1978); James E. Nidel, M.D. (Miami, 1973), Ph.D. (Miami, 1974); Michael C. Ostrowski, Ph.D. (South Carolina, 1979); David J. Pickup, Ph.D. (National Institute of Medical Research, London, 1979); David S. Pisetsky, Ph.D. (Albert Einstein, 1972), M.D. (Albert Einstein, 1973).

Assistant Medical Research Professors: Vickers Burdett, Ph.D. (Georgetown, 1973); Michael A. Hollingsworth, Ph.D. (Wake Forest, 1982); Donna D. Kostyu, Ph.D. (Duke, 1979); Kay H. Singer, Ph.D. (Duke, 1977).

Adjunct Assistant Professor: Lynn P. Elwell, Ph.D. (Oregon, 1974); William J. Hubbard, Ph.D. (Iowa, 1973); Susan F. Radka, Ph.D. (Pittsburgh, 1977).

Medical Research Associates: Mary Carrington, Ph.D. (Iowa, 1982); Enrique G. Estevez, Ph.D. (Miami, 1976); Lizzie J. Harrell, Ph.D. (North Carolina State, 1978).

Lecturer: Alfred P. Sanfilippo, Ph.D. (Duke, 1975), M.D. (Duke, 1976).

Research Associates: G. Adam, Ph.D.; J. Alexander, Ph.D.; M. Alliegro, Ph.D.; S. Bagchi, Ph.D.; A. Banerjee, Ph.D.; K. Brechling, Ph.D.; S. Chellappan, Ph.D.; J. Coner, Ph.D.; J. Cook, Ph.D.; J. Davis, Ph.D.; S. Deutscher, Ph.D.; M. Emara, Ph.D.; D. Frielle, Ph.D.; G. Gilmartin, Ph.D.; S. Hiebert, Ph.D.; A. Haviland, M.D.; A. Huff, Ph.D.; A. Kelekar, Ph.D.; Y. Kim, Ph.D.; D. Komma, Ph.D.; J. Lakota, M.D.; M. Lan, Ph.D.; C. Lapham, Ph.D.; P. Le, Ph.D.; M. Moody, Ph.D.; J. Moore, Ph.D.; M. Mudryj, Ph.D.; S. Mukerjee, Ph.D.; T. Mullins, Ph.D.; P. Patel, Ph.D.; P. Raychaudhuri, Ph.D.; M. Roner, Ph.D.; R. Rooney, Ph.D.; N. Schek, Ph.D.; W. Storkus, Ph.D.; T. Thompson, Ph.D.; Z. Wahab, Ph.D.; J. Wiener, Ph.D.; A. Yamamoto, Ph.D.

Required Courses

MIC-200. The core course in microbiology for medical students is given during the second semester of the first year. An intensive study is made of the common bacteria, viruses, fungi, and parasites which cause disease in man. The didactic portion of the course focuses on the nature and biological properties of micro-organisms causing disease, the manner of their multiplication, and their interaction with the entire host as well as specific organs and cells. The role of the immune system and of specific antimicrobial therapy on the host-parasite relationship are included.

The laboratory portion of the course is designed to acquaint students with the methods and procedures employed in clinical microbiology laboratories, to provide the basis for an understanding of cell-virus interactions, and to demonstrate the nature of the more common pathogenic fungi and parasites. Clinical case histories are presented by the clinical staff to correlate this course with patient care.

MIC-201. A short core course in immunology for first-year medical students. The course includes a general introduction to special areas of immunology such as immunochemistry, immunohematology, and immunogenetics including transplantation and tumor immunology. The initial lectures describe the properties of antibodies, the characteristics of antigens, classes of reactive lymphocytes and accessory cells, the biology of substances released from lymphocytes (lymphokines) and the complement system. The course is enriched with clinical presentations and by discussion groups.

Electives

MIC-246(B). Seminar on Parasitic Diseases. Topics in the physiology and immunology of major human and animal parasites with an emphasis on protozoa and schistosomes. Extensive reading in and discussion of current literature. Basic parasitology developed in introductory readings and lectures. Weight: 3. *Balber*

MIC-252(B). General Virology and Viral Oncology. The first half of the course will be devoted to a discussion of the structure and replication of mammalian and bacterial viruses. The second half deals specifically with tumor viruses, which are discussed in terms of the virus-cell interaction, the relationship of virus infection to neoplasia, and the application of retroviruses in molecular and developmental biology. Permission of the instructors is required. Weight: 4. *Keene, Joklik, Bastia, Ostrowski, Linney, and Pickup*

MIC-259(B). Molecular Biology I. Protein and Membrane Function. Detailed concepts of the structure and function of proteins as enzymes and as structural elements of cellular substructures, including: protein primary structure and its determination, patterns of protein folding, mechanisms of enzyme catalysis and regulation, function and formation of multimeric protein assemblies, proteins and other constituents of biological membranes. Weight: 3. *Richardson and staff*

MIC-268(B). Molecular Biology II. Nucleic Acids. Consideration of structure and metabolism of nucleic acids in the context of their biological function in information transfer. Emphasis will be on the current research literature. Weight: 3. *Modrich, Bastia, and Steege*

MIC-269(B). Advanced Cell Biology. An advanced course in cell biology with emphasis on current research literature, and featuring in-depth discussion of selected areas by staff engaged in research in these areas. The course covers membrane structure and physiology, the cytoskeleton, cell motility systems, chromosome mechanics, structure and function, and eukaryotic gene structure, control, and replication. Weight: 3. *Endow and staff*

MIC-291(B). Comprehensive Immunology. An intensive course in the biology of the immune system and the structure and function of its component parts. Major topics discussed are: properties of antigens; specificity of antibody molecules and their biologic functions; cells and organs of the lymphoid system; structure and function of complement; inflammation and nonspecific effector mechanisms; cellular interactions and soluble mediators in lymphocyte activation, replication, and differentiation; regulation of immune responses; neoplasia and the immune system; molecular structure and genetic organization of (a) immunoglobulins, (b) histocompatibility antigens, and (c) T cell receptor. Weight: 4. *Finn, Argon and staff*

MIC-301(B). Principles of Infectious Disease. A seminar course to familiarize students with the basic biologic concepts, the pathogenesis, and the clinical manifestations of infectious diseases caused by bacteria, viruses, fungi, rickettsia. The host defenses to infectious agents including the acute inflammatory response and humoral, cellular immunity, and current and future trends in the development of vaccines and antimicrobial and antiviral agents will also be discussed. Weight: 3. *Wilfert, Gutman, Katz, Durack, Mitchell, Osterhout, Joklik, and Keene*

MIC-304(B). Molecular Membrane Biology. Advanced seminar course on various cellular membranes; emphasis on cell biology of the immune system. Discussion topics include: biosynthesis of membrane proteins; intracellular transport vesicles; endocytosis; signal transduction across the plasma membrane; intracellular organelles and protein sorting; cell interactions in differentiation. Weight: 2. *Argon and Cresswell*

MIC-306(B). Clinical Microbiology. A bench-training course in methods used in clinical microbiology stressing isolation, characterization, and antibiotic susceptibility testing of clinically significant microorganisms. Course conducted in Duke microbiology division laboratories (bacteriology, anaerobic bacteriology, mycobacteriology, mycology, parasitology and serology). Prerequisite: permission of instructor. Weight: 8. *Klein*

MIC-308(B). Clinical Microbiology-Immunology. A bench-training course in methods used in clinical microbiology stressing isolation and characterization of clinically significant microorganisms. Course conducted in the V. A. Medical Center microbiology laboratory. Weight: 8. *Zwadyk*

MIC-310(B). Molecular Development. Selected topics of current research using molecular and genetic approaches to study development and developmental gene regulation in eukaryotes. Lectures and student presentations of research with various developmental systems (e.g., *C. elegans*, *Drosophila*, mouse teratocarcinoma cells, mouse embryos) will be included. Weight: 2. *Linney, Bastia, Endow, and Ostrowski*

MIC-325(B). Medical Mycology. Comprehensive lecture and laboratory coverage of all the fungi pathogenic for humans. The epidemiology, clinical manifestations, diagnosis, host responses and treatment of each mycotic disease will be explored, along with the biology, ecology, immunology, and mechanisms of pathogenicity of the fungal agents. Both practical aspects and future trends in clinical mycology, as well as the dynamics of host-fungal interactions will be covered. There will be several invited lecturers, each an internationally recognized scientist, discussing their particular areas of mycological expertise and current research. Weight: 4. *Mitchell*

MIC-330(B). Medical Immunology. This is a comprehensive course in clinical immunology which attempts to define the role that immunology plays in the etiology, diag-

nosis, nosology, and therapy of human disease. The course includes some lectures on basic and applied immunology with many lectures given by faculty members from clinical departments. Weight: 6. *Ward and staff*

MIC-336(B). Contemporary Topics in Immunogenetics. Selected themes in immunogenetics with special emphasis on molecular approaches. The major areas discussed are: the nature, interaction and expression of immunoglobulin genes and T-cell receptor genes, the genes of the major histocompatibility complex, and the genes of the T/t complex. The central ideas discussed include the manner in which cells recognize and interact with each other in phylogeny, ontogeny, and in differentiation; how gene families evolve and interact, and how information about these complex genetic systems is used in basic research and in clinical medicine. Prerequisite: MIC-291(B). Weight: 2. *Amos and Ward*

MIC-339(B). Diagnostic Microbiology and Infectious Disease. Introduction to the methods for the laboratory diagnosis of infectious disease and their clinical application. Basic biologic and clinical aspects will be correlated in a seminar-lecture format. Weight: 2. *Suydam Osterhout*

MIC-399(B). Preceptorship in Microbiology and Immunology. An individual reading and/or laboratory course in specialty areas supervised by an individual faculty member. Acceptance, nature of topic, and amount of credit by individual arrangement with proposed faculty member. Weight: 1-18. *Microbiology and immunology staff*

Obstetrics and Gynecology

Professor: Charles B. Hammond, M.D., E. C. Hamblen Chair of Reproductive Biology and Family Medicine, (Duke, 1961), *Chairman*.

Professors: Arthur C. Christakos, M.D. (Med. Coll. of South Carolina, 1955); Daniel Clarke-Pearson, M.D. (Case Western Reserve, 1975); Allen P. Killam, M.D. (Texas, 1960); Roy T. Parker, M.D., F. Bayard Carter Chair of Obstetrics and Gynecology, (Med. Coll. of Virginia, 1944); Warren E. Patow, M.D. (Marquette, 1947); Charles H. Peete, Jr., M.D. (Harvard, 1947); David W. Schomberg, Ph.D. (Purdue, 1965); E. Lee Tyrey, Ph.D. (Illinois, 1969).

Adjunct Professor: William T. Creasman, M.D. (Baylor, 1966).

Associate Professors: W. Allen Addison, M.D. (Duke, 1960); Nels C. Anderson, Ph.D. (Purdue, 1964); Arthur F. Haney, M.D. (Arizona, 1972); Gail B. Hill, Ph.D. (Duke, 1966); Lloyd F. Redick, M.D. (Ohio, 1958).

Associate Clinical Professor: John F. Steege, M.D. (Yale, 1972).

Associate Consulting Professor: Donald T. Moore, M.D. (Meharry, 1958).

Assistant Professors: Dale M. Bearman, M.D. (Tufts, 1981); Andrew Berchuck, M.D. (Case Western Reserve, 1980); James D. Bowie, M.D. (Oklahoma, 1967); Jane E. Brazey, M.D. (Washington Univ., 1972); Karen H. Brown, M.D. (Alabama, 1982); Paul C. Browne, M.D. (Duke, 1978); Carl W. Christensen, M.D., Ph.D. (Wayne State, 1979); William C. Dodson, M.D. (Temple, 1980); Arnold S. Grandis, M.D. (Duke, 1974); Marvin Hage, M.D. (Michigan, 1967); Claude L. Hughes, M.D., Ph.D. (Duke, 1980); Verda J. Hunter, M.D. (Illinois, 1982); Helen Kay, M.D. (Yale, 1979); Charles H. Livengood III, M.D. (Duke, 1976); Deborah A. Metzger, M.D., Ph.D. (Texas at Houston, 1982); Joanne T. Piscitelli, M.D. (Duke, 1980); Patricia M. Saling, Ph.D. (Pennsylvania, 1979); John T. Soper, M.D. (Iowa, 1978); Anna L. Stout, Ph.D. (South Carolina, 1980); M. Crystie Timmons, M.D. (North Carolina at Chapel Hill, 1975); Camille J. Wahbeh, M.D. (Lebanon, 1980); L. Lewis Wall, M.D., Ph.D. (Kansas, 1983); J. Brice Weinberg, M.D. (Arkansas, 1969); Roger C. Young, M.D., Ph.D. (North Carolina at Chapel Hill, 1982).

Assistant Clinical Professors: Karen C. Diaz, M.D. (Texas, 1983); Joseph T. Lenman, Ph.D. (Indiana, 1977).

Assistant Consulting Professors: James L. Allen, M.D. (Emory, 1965); Paul S. Andrews, M.D. (North Carolina at Chapel Hill, 1981); John V. Avrey, M.D. (Harvard, 1946); Joseph W. Baggett, M.D. (Maryland, 1946); Arnold R. Barefoot, M.D. (North Carolina at Chapel Hill, 1982); Rudy W. Barker, M.D. (North Carolina at Chapel Hill, 1967); Mary K. Beckwith, M.D. (Iowa, 1982); Walker H. Campbell, M.D. (Med. Coll. of Virginia, 1963); David B. Crosland, M.D. (North Carolina at Chapel Hill, 1958); Yancey G. Culton, Jr., M.D. (Duke, 1956); Jerry L. Danford, M.D. (Duke, 1967); Crowell T. Daniel, Jr., M.D. (Med. Coll. of Virginia, 1948); Michael D. Fried, M.D. (New York, 1971); Carl A. Furr, Jr., M.D. (North Carolina at Chapel Hill, 1958); E. C. Garber, Jr., M.D. (Med. Coll. of Virginia, 1944); Michael D. Gooden, M.D. (North Carolina at Chapel Hill, 1973); William B. Gunter, Jr., M.D. (Emory, 1982); William D. Haithcock, M.D. (Med. Univ. of South Carolina, 1973); Joe W. Hardison, M.D. (North Carolina at Chapel Hill, 1965); Perry M. Harmon, M.D. (North Carolina at Chapel Hill, 1974); James F. Holman, M.D. (Arkansas, 1970); Wanda L. Jenkins, M.D. (Cincinnati, 1979); Harry W. Johnson, M.D. (Duke, 1951); John W. Lane, M.D. (Duke, 1972); Richard L. Lassiter, M.D. (North Carolina at Chapel Hill, 1965); Stephen C. Lies, M.D. (Duke, 1976); Frank E. Long, M.D. (Maryland, 1975); William A. Nebel, M.D., (North Carolina at Chapel Hill, 1962); Talbot F. Parker, Jr., M.D. (Jefferson, 1951); Phillip H. Pearce, M.D. (Duke, 1960); Steven M. Scott, M.D. (Indiana, 1974); W. Siegfried Smith, Jr., M.D. (Duke, 1961); Robert K. Yowell, M.D. (Duke, 1961).

Assistant Medical Research Professor: Christopher P. Carron, Ph.D. (Iowa, 1982).

Associates: Roderick F. Hume, M.D. (University of Florida, 1980); Sharon L. Rupp, B.S., A.A.S.; Andrew P. Soisson, M.D. (Georgetown, 1981); David K. Walmer, M.D., Ph.D. (North Carolina at Chapel Hill, 1983).

Clinical Associates: Karen Albiez, M.S.; Elizabeth J. Burkett, B.S.N., M.S.N.

Consulting Associates: Vivian E. Clark, M.D. (Boston Univ., 1981); Francis S. Gardner, Jr., M.D. (Maryland, 1951); Ronald E. Granger, M.D. (California at Irvine, 1977); Charles O. Harris, M.D. (Duke, 1979); Bennet A. Hayes, M.D. (North Carolina at Chapel Hill, 1957); Clayton J. Jones, M.D. (Tennessee, 1952); Glenward T. Keeney, M.D. (Med. Coll. of Virginia, 1967); William R. Lambeth, M.D. (Bowman Gray, 1974); Linda T. McAlister, M.D. (California at San Francisco, 1978); Jack P. McDaniel, M.D. (North Carolina at Chapel Hill, 1956); Dudley C. Miller, M.D. (Missouri, 1959); E. Frank Shavender, M.D. (North Carolina at Chapel Hill, 1968); Ira Q. Smith, M.D. (Bowman Gray, 1979); Joseph A. Stephens, M.D. (Pittsburgh, 1952); Thomas A. Stokes, Jr., M.D. (Duke, 1955); Allen H. Van Dyke, M.D. (Bowman Gray, 1971); Paul A. Vieta, M.D. (New Jersey, 1966); Bertram E. Walls, M.D. (Duke, 1972).

Required Course

In Introduction to Clinical Medicine the first-year student receives instruction in the fundamentals of obstetric and gynecologic history and pelvic examinations.

OBG-205. Required of all second-year students—consists of eight weeks in general obstetrics and gynecology. Students attend lectures, work daily in the general and special outpatient clinics, and are assigned patients on the obstetric and gynecologic wards. Students share in patient care, teaching exercises, and in daily tutorial sessions with the faculty. Clinical conferences, a gynecologic-pathology conference, endocrine conferences, and correlative seminars and lectures are included.

Electives

OBG-210(C). Gynecologic Cancer. This course presents a clinical experience in the management of the patients with a gynecologic malignancy. The student will assume the role of an extern. Outpatient, inpatient, and operative exposure to these patients will be extensive. Weight: 4 or 8. *Clarke-Pearson, Soper, Berchuck, Parker, Hunter, and Christensen*

OBG-213(C). Preparation for Practice, Cape Fear Valley Hospital, Fayetteville Area Health Education Center. This is a unique opportunity to receive both didactic exposure and clinical experience in obstetrics and gynecology in Cape Fear Valley Hospital, a large community hospital in Fayetteville, North Carolina, where almost 4,000 patients are delivered each year. The student will actively participate in the care of patients in the labor and delivery rooms, assist at surgery, and render postoperative care. This is a community hospital experience rather heavily weighted in clinical obstetrics. Students will be exposed to a large volume of clinic opportunities. Two senior residents from Duke rotate through Cape Fear Valley Hospital. The student will be directly supervised by Dr. Warren Patow (full-time Duke faculty at Cape Fear) and Dr. Ed Garber, in addition to Duke obstetrics and gynecology residents. Weight: 4. *Hammond, Patow, Garber, and staff of Cape Fear Valley Hospital*

OBG-231(C). Clinical Reproductive Endocrinology. Course for students who desire additional basic and clinical experience in examination, diagnosis, and treatment of obstetric and gynecologic patients with endocrinopathy and infertility. Course consists of instruction in clinical reproductive problems correlated with examination and treatment of patients both in the Endocrinology Outpatient Clinic and in the hospital. Permission of instructor required. Weight: 4. *Haney, Hammond, Dodson, Hughes, Schomberg, Tyrey, Saling, and fellows on Endocrine Division*

OBG-239(C). Perinatal Medicine. A study of the relationship of clinical factors during pregnancy, labor, delivery, and the first month of life. Emphasis will be placed on abnormal conditions of pregnancy as related to the infant, prenatal pathological conditions adversely afflicting the fetus and newborn, and early management of the infant. Current problems in maternal-fetal relationships will be outlined. The clinical rotation will consist of half time on the high-risk obstetric service and half time on the nursery

service. (Duke North ICN, or Duke South nurseries.) See also PED 239(C) and PED 225(C). Weight: 8. Must contact Dr. Killam prior to registration. *Killam*

OBG-245(C). Office Gynecology. For students preparing for general practice, medicine, pediatrics, and surgery. Outpatient clinic and emergency room diagnosis and patient care are taught. Weight: 4 or 8. *Parker and staff*

OBG-247(C). Clinical Obstetrics. For students preparing for general practice of medicine, pediatrics or obstetrics and gynecology. This course will study the relationship of clinical factors during pregnancy, labor and delivery. Emphasis will be placed on abnormal conditions of pregnancy as related to the infant. Current problems in the maternal-fetal relationship will be outlined. The student will function on an intern level and take part in activities of the housestaff and faculty. Weight: 4 or 8. *Killam, Grandis, Hage, Kay, and fellows on obstetrical service*

OBG-249(C). Clinical Gynecology. For students preparing for obstetrics and gynecology general practice, surgery, and urology. Emphasis is placed on the outpatient assessment of patients with acute and chronic gynecologic disorders including benign neoplasia, loss of pelvic support, menopausal symptomatology, and others. Students will have the opportunity to work closely with faculty members in the Division of Gynecology. Inpatient care is not required but participation in the operative care of gynecologic patients can be arranged if desired. Ample time for independent study is planned. It is anticipated that the student will utilize this time reviewing a specific clinical problem with frequent guidance and input from a member of the gynecology division with similar interests. Weight: 4 or 8. *Addison, Parker, Peete, Christakos, Livengood, Steege, Bearman, Piscitelli, Young, Wall, and Timmons*

OBG-250(C). Psychosomatic Gynecology. For students interested in obstetrics and gynecology, family practice, and internal medicine. This course will emphasize clinical experience in the diagnosis and treatment of chronic pain, as well as the management of other psychosomatic and psychophysiologic problems in gynecologic practice. Clinical research may be undertaken by arrangement. Must contact Dr. Steege prior to registration. Weight: 1-4. *Steege and Stout*

OBG-253(C). Preparation for Practice, Cabarrus Memorial Hospital, Concord, North Carolina. This is an opportunity to receive both didactic exposure and clinical exposure in obstetrics and gynecology in the community hospital. The student will be expected to function as an intern and will participate actively in the care of the patients in the labor and delivery area, assist at surgery, and render postpartum and postoperative care. This is a community hospital experience rather heavily weighted in clinical obstetrics. The student will be exposed to a large volume of clinical material. The practitioners in the community are all board-certified obstetricians and gynecologists and are interested in student teaching. A Duke faculty person will provide additional guidance by visits once per week. This elective can be taken for four weeks for four units or eight weeks for eight units. The student will be housed in quarters available for them. Prerequisites: Permission of Dr. Hammond prior to signing for the course. Weight: 4, 6, or 8. *Hammond and staff of the Cabarrus Memorial Hospital*

Ophthalmology

Professor: Helena Rubenstein Foundation Professor of Ophthalmology Robert Machemer, M.D. (Freiburg, Germany, 1959), *Chairman*.

Professors: W. Banks Anderson, Jr. M.D. (Harvard, 1956); Diane Van Horn Hatchell, M.D. (Marquette, 1968); Gordon K. Klintworth, M.D. (Univ. of Witwatersrand, 1957), Ph.D. (Univ. of Witwatersrand, 1966); M. Bruce Shields, M.D. (Oklahoma, 1966).

Associate Professors: Gary N. Foulkes, M.D. (Columbia, 1970); Brooks W. McCuen II, M.D. (Columbia, 1974).

Assistant Professors: Edward G. Buckley, M.D. (Duke, 1977); L. Michael Cobo, M.D. (Harvard, 1975); Eugene de Juan, M.D. (Alabama, 1979); Jonathan J. Dutton, M.D. (Washington, 1977); Stephen C. Pollock, M.D.

(Illinois, 1981); Alan D. Proia, Ph.D. (Rockefeller, 1979), M.D. (Cornell, 1980); Einar Stefansson, M.D. (Univ. of Iceland, 1978); James S. Tiedeman, M.D. (Duke, 1977).

Associate Clinical Professors: Arthur C. Chandler, Jr., M.D. (Duke, 1959); Edward K. Isby, Jr., M.D. (Wayne, 1955); Lawrence W. Moore, Jr., M.D. (Duke, 1963); Judy H. Seaber, Ph.D. (Duke, 1985).

Clinical Professor: Samuel D. McPherson, Jr., M.D. (Johns Hopkins, 1943).

Assistant Clinical Professors: David P. Berry, M.D. (South Carolina, 1975); John W. Cline, M.D. (North Carolina at Chapel Hill, 1966); Robert D. Dawson, M.D. (Meharry, 1943); Edward M. Hedgepeth, M.D. (North Carolina at Chapel Hill, 1962); Thomas C. Kerns, M.D. (Duke, 1950); Walter C. McLean, Jr., M.D. (Virginia, 1975); Calvin H. Mitchell, M.D. (Duke, 1958); Charles F. Sydnor, M.D. (Virginia, 1969); Robert P. Yeatts, M.D. (Bowman Gray, 1978).

Clinical Associates: Thomas L. Beardsley, M.D. (Duke, 1971); Dorothy Bell, M.D. (North Carolina at Chapel Hill, 1980); J. Thomas Foster, M.D. (Duke, 1958); William R. Harris, M.D. (North Carolina at Chapel Hill, 1956); John H. Killian, M.D. (Bowman Gray, 1967); Martin J. Kreshon, M.D. (Marquette, 1954); W. Hampton Lefler, M.D. (Bowman Gray, 1963); Joseph A. Locascio, M.D. (Virginia, 1975); Bettina B. Meekins, M.D. (Miami, 1982); Edward E. Moore, M.D. (Harvard, 1942); Harold E. Shaw, Jr., M.D. (Med. Univ. of South Carolina, 1973); William C. Stewart, M.D. (Southwestern, 1981); John M. Williams, M.D. (Southwestern, 1982).

Emeritus: Joseph A. C. Wadsworth, M.D.

Electives

OPH-210(C). Medical Ophthalmology. The ophthalmic signs and symptoms of systemic disease are presented in a lecture series. Oriented for those students interested primarily in pediatrics, internal medicine, or ophthalmology. Weight: 1. *Shields, Tiedeman, and Mitchell*

OPH-212(C). General Ophthalmology. A clinical preceptorship in which the student will participate and observe in the regular house staff activities, conferences, lectures, patient care, and treatment including surgery. Emphasis on the use of specialized ophthalmic apparatus is emphasized. Weight: 4-8. *Shields*

OPH-213(C). Ophthalmic Pathology. The student will review all ophthalmic pathology specimens submitted and any pertinent permanent specimens. He or she will attend all regular ongoing ophthalmic pathology conferences. Weight: 1. *Klintworth and Proia*

OPH-214(C). Investigative Ophthalmology. The student is assigned a project relating to basic ophthalmologic problems. Technical assistance, sufficient equipment and laboratory animals are supplied for the completion of the project. The student is expected to attend all scheduled research seminars. Prerequisites: OPH-212(C) and OPH-210(C) suggested but not required. Student must devote at least three months to the elective. Weight: 4-8. *Klintworth*

OPH-215(C). Pediatric Ophthalmology. A clinical preceptorship in which the student will participate in an outpatient pediatric ophthalmology clinic. The student will encounter the more common ocular disorders of childhood, including ocular motility disturbances, congenital disorders, and congenital metabolic disorders. The diagnosis and treatment aspects will be emphasized heavily. The course meets on Tuesdays from 9 A.M. until 4 P.M., or by special arrangement. Additional experiences, which would include surgery and/or pediatric neuro-ophthalmology can be arranged. Weight: 1 or 2. *Buckley and Seaber*

OPH-216(C). Clinical Neuro-Ophthalmology. Neuro-ophthalmology is the ocular manifestation of neurologic disease. The course is designed to equip the student with the techniques necessary to recognize a commonly encountered neuro-ophthalmic disorder. Emphasis will be placed on optic nerve exam, ocular motility disorders, pupillary abnormalities, and visual field defects. Weight: 1. *Pollack*

Pathology

Professor: James B. Duke Professor Robert B. Jennings, M.D. (Northwestern, 1950), *Chairman*.

Professors: Dolph O. Adams, M.D. (Med. Coll. of Georgia, 1965); Ph.D. (North Carolina at Chapel Hill, 1972); Darell D. Bigner, M.D. (Duke, 1965), Ph.D. (Duke, 1971); Sandra H. Bigner, M.D. (Tennessee, 1971);

Edward H. Bossen, M.D. (Duke, 1965); William D. Bradford, M.D. (Western Reserve, 1958); Peter C. Burger, M.D. (Northwestern, 1966); Bernard F. Fetter, M.D. (Duke, 1944); Doyle G. Graham, M.D. (Duke, 1966); Donald B. Hackel, M.D. (Harvard, 1946); William W. Johnston, M.D. (Duke, 1959); Gordon K. Klintworth, M.D. (Univ. of Witwatersrand, 1957), Ph.D. (Univ. of Witwatersrand, South Africa, 1966); John A. Koepke, M.D. (Wisconsin, 1956); George Michalopoulos, M.D. (Athens, 1969), Ph.D. (Wisconsin, 1977); Salvatore Pizzo, M.D. (Duke, 1972), Ph.D. (Duke, 1973); Conrad Richter, V.M.D. (Pennsylvania, 1959); Kenneth A. Schneider, M.D. (Northwestern, 1959); John D. Shelburne, M.D. (Duke, 1972), Ph.D. (Duke, 1971); Joachim R. Sommer, M.D. (Munich, 1951); F. Stephen Vogel, (Western Reserve, 1944); Benjamin Wittels, M.D. (Minnesota, 1952).

Adjunct Professor: Paul Nettesheim, M.D., D.M.S. (Bonn, West Germany, 1959).

Associate Professors: Michael J. Borowitz, M.D., Ph.D. (Duke, 1977); Jane G. Elchlepp, M.D. (Chicago, 1955), Ph.D. (Iowa, 1948); Raymond E. Ideker, M.D. (Tennessee, 1971); Kenneth McCarty, Jr., M.D. (Duke, 1972), Ph.D. (Duke, 1973); Keith A. Reimer, M.D. (Northwestern, 1972); Alfred Sanfilippo, Ph.D. (Duke, 1975), M.D. (Duke, 1976); Frances King Widmann, M.D. (Case Western Reserve, 1960); Peter Zwadyk, Jr., Ph.D. (Iowa, 1971).

Clinical Associate Professor: Emily A. G. Reisner, Ph.D. (Case Western, 1969).

Adjunct Associate Professor: James A. Swenberg, D.V.M. (Minnesota, 1966), Ph.D. (Ohio, 1970).

Assistant Professors: John L. Abernethy, M.D., Ph.D. (Duke, 1980); Douglas C. Anthony, Ph.D. (Duke, 1983); Robert H. Christenson, Ph.D. (Florida State, 1980); James D. Crapo, M.D. (Rochester, 1971); Barbara J. Crain, M.D., Ph.D. (Duke, 1979); Henry S. Friedman, M.D. (New York at Syracuse, 1977); Marcia Gottfried, M.D. (Northwestern, 1978); Charles S. Greenburg, M.D. (Hahnemann, 1976); John M. Harrelson, M.D. (Duke, 1965); David Howell, Ph.D. (Duke, 1982), (Duke, 1984); Randy H. Jirtle, Ph.D. (Wisconsin, 1976); Richard M. Levenson, M.D. (Michigan, 1979); James E. Lowe, M.D. (California at Los Angeles, 1973); Alan D. Proia, Ph.D. (Rockefeller, 1979), M.D. (Cornell, 1980); L. Darryl Quarles, M.D. (Alabama, 1979); Victor L. Roggli, M.D. (Baylor, 1976); Jonathan I. Scheinman, M.D. (Illinois, 1966); Clifford S. Schold, M.D. (Arizona, 1973); Charles Steenberg, M.D. (Pennsylvania, 1978), Ph.D. (Pennsylvania, 1979); Cheryl L. Szpak, M.D. (Southwestern, 1977); John Toffaletti, Ph.D. (North Carolina at Chapel Hill, 1977); J. Allan Tucker, M.D. (Vanderbilt, 1981); Philip J. Walther, Ph.D. (Duke, 1974), M.D. (Duke, 1975); Michael R. Zalutsky, Ph.D. (Washington Univ., 1974).

Assistant Clinical Professors: Jane Gaede, M.D. (Duke, 1966); Robin T. Vollmer, M.D. (Duke, 1967).

Assistant Medical Research Professors: Venkataraman Amarnath, Ph.D. (Carnegie-Mellon, 1973); William M. Baldwin III, Ph.D. (Rochester, 1973), M.D. (Rochester, 1975); Paul C. Dolber, M.D. (Duke, 1980); Steven S. Geier, Ph.D. (Duke, 1978); Mario Gonzalez-Gronow, Sc. (Chile, 1970); T. J. Koerner, Ph.D. (Cincinnati, 1982); Carol W. Lewis, Ph.D. (North Carolina at Chapel Hill, 1972); James G. Lewis, Ph.D. (Duke, 1982); Eileen M. Mikat, Ph.D. (Duke, 1979); Veronica Prpic-Uhing, Ph.D. (Australian National University, 1980); Guy S. Salvesson, Ph.D. (Cambridge Univ., 1980).

Associate Medical Research Professor: Thomas A. Hamilton, Ph.D. (Oregon, 1976).

Adjunct Assistant Professors: Arnold R. Brody, Ph.D. (Colorado, 1969); Jack A. Dean, Ph.D. (Arizona, 1972); Peter Ingram, Ph.D. (Univ. of Southampton, England, 1967); Ralph C. McCoy, M.D. (Emory, 1967); James Alan Popp, D.V.M. (Ohio State, 1968), Ph.D. (California at Los Angeles, 1972); Frank A. Sedor, Ph.D. (Florida, 1971); Jerry E. Squires, Ph.D. (Yale, 1971), M.D. (West Virginia, 1974).

Associates: John A. Bittikofer, Ph.D. (Purdue, 1971); Kenneth R. Broda, Ph.D. (Duke, 1977); Ola Melhus, M.D. (Medizinische Hochschule, 1980); Margaret C. Schmidt, M.A. (Louisville, 1969); Katherine Tabatowski, M.D. (Wayne State, 1980).

Required Course

PTH-200. The core course in pathology is given during the second term of the first year. Fundamentals of pathology are presented by correlating gross and microscopic material to illustrate the structural changes in disease. Lectures dealing with broad concepts of disease processes are presented by senior faculty, and conferences with small groups of students are held under the guidance of staff members. Etiology and pathogenesis of disease, as well as the experimental approach are emphasized for the purpose of correlation with clinical disease. In addition to group work, conferences are scheduled to discuss problems derived from autopsies. Students are required to collaborate in postmortem studies and present cases in clinical-pathologic conferences under the direction of the staff.

Electives

PTH-223(B). Autopsy Pathology. The course is intended to introduce students to the autopsy as an investigative tool; anatomic-clinical correlation is emphasized. Students work directly with one or more members of the Pathology Department. They will first assist at autopsies and then perform autopsies under supervision. They will work up these cases with particular attention to correlations with clinical and experimental medicine, prepare the final autopsy reports on them, and will work essentially at the level

of a house officer. Students will be expected to present their findings at staff conferences. Weight: 8. *Adams*

PTH-225(B). Cardiovascular Pathology. Cardiovascular disease processes will be studied, reviewing anatomic, embryologic, and physiologic features, and utilizing case material and gross specimens. Clinicopathologic correlation will be stressed. Weight: 2. *Hackel, Reimer, Ideker, and Mikat*

PTH-231(B). Ophthalmic Pathology. This course is designed for students with an interest in ophthalmic diseases and particularly for those planning a career in pathology or ophthalmology, and will consist of lectures, seminars, and laboratory sessions. The normal anatomy and embryology of the eye will be reviewed, and the various reactions of the eye to injury will be studied in gross and microscopic specimens. The more common diseases will be considered in detail. Weight: 3. *Klintworth*

PTH-237(B). Surgical Pathology. This course is designed for the student who wishes more experience in the study of disease. Although the course is entitled Surgical Pathology, this does not imply interest solely in the individual oriented to surgery. Problems in dermatology, gynecology, orthopaedics, general surgery, internal medicine, and other specialties will be considered. The program of study will consist of lectures, demonstrations, and laboratory work. Microscope required (limited number available on loan). Weight: 4. *Fetter*

PTH-241(B). Systemic Pathology. This will be a lecture course that will go into more detail than the core course in pathology. It will be given especially for students taking the program in pathology, but will be available as a separate elective for individual students. Lectures will be from 4-5 each Monday and Wednesday. Different topics will be included in the four eight-week long terms. Weight: 1. *Hackel, Vogel, and Bradford*

PTH-281(B). Cytopathology Preceptorship. This course consists of a full-time rotation by the student in the diagnostic cytopathology laboratories. By working with the laboratory staff, the student will explore in detail the role played by exfoliative cytopathology in the diagnosis of disease. Although not a requirement, the student will be encouraged to pursue special research projects. Weight: 8. *Johnston, Bossen, Bigner, and staff*

PTH-321(B). Hormone and Tissue Interactions in Differentiation and Disease. Hormones and other biochemical signals involved in the regulation of the differentiated state including amino acids, polypeptide and steroid hormone response through higher vertebrates will be discussed in terms of the new biotechnology used to elucidate mechanisms of information transfer and gene control at the level of the chromatin. Cell-cell, cell-matrix, and hormonal interactions will be considered as control elements in development and differentiation. Interactions involving the cell surface, the basal lamina, and extracellular matrix will be discussed in terms of differentiation of limb bud/pancreas/lymphocyte/and neural tissue. Conferences will include hormone control of sex differentiation, ectopic hormone biosynthesis, and endocrine related diseases. The course is designed as an extension of the course Differentiation in Development and Disease. Weight: 2, Max: 5. *K. McCarty, Sr., Kaufman, and K. McCarty, Jr.*

PTH-342(B). Special Topics in Pathology. Special problems in pathology will be studied with a member of the senior staff; the subject matter will be individually arranged. Permission of the instructor required. Weight: 1-16. *Jennings and staff*

PTH-346(B). Subcellular and Molecular Pathology. This course is designed for students wishing to broaden their knowledge of cellular structure and cellular pathology. A series of lectures and seminars will be presented on the alterations in cellular structure and associated function that accompany cell injury. Ultrastructural changes in selected human diseases will be discussed in detail with emphasis on diagnosis and pathogenesis. Weight: 2. *Shelburne, Jennings, Sommer, and Crain*

PTH-348(B). Practical Surgical Pathology. This course will be in the form of an apprenticeship in which the student will work closely with the resident in the actual preparation and diagnosis of tissue changes. Microscope required (limited number available on loan). Prerequisites: Permission of instructor. Weight: 8. *Bossen and staff*

PTH-353(B). Neuropathology. A view of neuropathology that emphasizes clinicopathologic correlation. Weight: 3. *Vogel and staff*

PTH-359(B). Fundamentals of Electron Microscopy. Emphasis will be placed on the theory and application of electron microscopy to ultrastructural pathology. The methods relating to electron microscopy, as well as X-ray microanalysis and ion microscopy, will be considered. Laboratory experience will be included. Weight: 3. *Shelburne, Sommer, and Ingram*

PTH-362(B). Pathology of the Kidney. This course is a comprehensive study of pathological, immunological, and clinical features of the various types of glomerulonephritis, nephrotic syndrome, and pyelonephritis, as well as of metabolic, congenital, and neoplastic renal disorders. Lectures will be supplemented with gross and microscopic specimens, demonstrations, clinico-pathological discussions and student seminars. Weight: 3. *Sanfilippo, Kolbeck, and Jennings*

PTH-364(B). Skeletal Pathology. Special problems in skeletal pathology will be dealt with beginning with a discussion of the development of connective tissue. Special emphasis on bone tumors, metabolic diseases, and traumatic problems will be considered. Weight: 2. *Harrelson*

PTH-366(B). Pulmonary Pathology and Pathophysiology. Emphasis will be on pulmonary pathology and pathophysiology of infectious, metabolic, environmental, and neoplastic diseases, and certain diseases of unknown etiology (e.g., sarcoid, alveolar proteinosis, etc.). Weight: 3. *Pratt and Roggli*

PTH-371(B). The Laboratory Basis for Clinical Medicine. This course will emphasize evaluation and interpretation of laboratory data relative to pathophysiologic processes. Development of judgment and selectivity in utilizing laboratory tests will be taught. Course will consist of lectures and conferences. Clinical-pathologic correlation will be stressed by detailed case studies of specific patients. Weight: 2. *Gaede, Widmann, Pizzo, and Zwadyk*

PTH-372(B). Environmental Diseases. The course features guest lecturers and student presentations to cover examples of disease produced by technological exploitation of the earth and "life study." Subjects include population, respiration-air and ocean, and examples of diseases due to asbestos, lead, mercury, hydrocarbons, carcinogens, organic dusts, DDT, cigarette smoke, etc. Weight: 2. *Pratt and Lynn*

PTH-373(B). Diagnostic Immunopathology. The course reviews diagnostic and laboratory procedures used in evaluating immunologic diseases; especially autoimmune, infectious, immunodeficiency, immunoproliferative, and hypersensitivity disorders. Emphasis is placed on the theoretical and practical aspects of testing procedures and their proper interpretation. Weight: 2. *Sanfilippo, Zwadyk, Borowitz, Baldwin, and Kolbeck*

PTH-374(B). Pulmonary Structure and Function Seminar. Current and exemplar pathological material on lungs, including gross, histologic, and electron microscopic data, is correlated with *in vitro* function and clinical features; physiological measurements; and roentgenographic findings. The structural features of the types of reaction of lung cells to injury are interpreted against this background. Such demonstration material is correlated by lectures. Weight: 1. *Pratt, Lynn, and Roggli*

PTH-378(B). Seminars in Hematology. This is a systematic survey of the pathophysiology and morphology of human hematological diseases. Each student will

survey the literature on several topics and prepare an oral presentation which will be critically discussed by the group. Opportunity for experience in blood marrows and lymph node analysis will be available. Weight: 2. *Wittels*

PTH-380(B). Surgical Pathology with Emphasis on Electron Microscopy. This course will be in the form of an apprenticeship in which the student will become engaged in the actual preparation and diagnosis of tissue changes using both light and electron microscopy. The student will, of necessity, learn how to operate the electron microscope. Weight: 8. *Shelburne, Vollmer, and Tucker*

PTH-385(B). Cancer Biology. The course will examine the properties of the neoplastic cells and the mechanisms that lead to neoplastic transformation. The role of growth factors and oncogene expression in the definition or the establishment of the neoplastic phenotype will be given special emphasis. The properties of the neoplastic cells will be analyzed on the basis of the mechanisms of normal cell growth regulation (response of normal cells to growth factors, mechanisms of signal transduction through the plasma membrane, expression of intracellular oncogenes). Weight: 3. *Michalopoulos, Falletta, and staff.*

Pediatrics

Wilbur C. Davison Professor Samuel L. Katz, M.D. (Harvard, 1952), *Chairman.*

Professors: Page A. W. Anderson, M.D. (Duke, 1963); James B. Sidbury Professor Rebecca H. Buckley, M.D. (North Carolina at Chapel Hill, 1958); John M. Falleta, M.D. (Kansas, 1966); Howard Filston, M.D. (Western Reserve, 1962); Thomas E. Frothingham, M.D. (Harvard, 1951); Herman Grossman, M.D. (Columbia, 1953); Stuart Handwerker, M.D. (Maryland, 1964); Charles R. Roe, M.D. (Duke, 1964); James B. Duke Professor Madison S. Spach, M.D. (Duke, 1954); Alexander Spock, M.D. (Maryland, 1955); Catherine M. Wilfert, M.D. (Harvard, 1962).

Associate Professors: Brenda E. Armstrong, M.D. (St. Louis, 1974); Roger C. Barr, Ph.D. (Duke, 1968); Jane E. Brazy, M.D. (Washington Univ., 1972); Rosalind Coleman, M.D. (Western Reserve, 1969); Bernard J. D'Souza, M.B., Ch.B. (Makerere, Kampala, Uganda, 1967); Peter C. English, M.D., Ph.D. (Duke, 1975); Henry Friedman, M.D. (New York at Syracuse, 1977); Laura T. Gutman, M.D. (Stanford, 1963); Allen P. Killam, M.D. (Texas at Galveston, 1960); Lowell King, M.D. (Johns Hopkins, 1956); Thomas R. Kinney, M.D. (Duke, 1970); Darrell V. Lewis, M.D. (Minnesota, 1969); John Looney, M.D. (Southwestern, 1969); Jonathan I. Scheinman, M.D. (Illinois, 1966); Raymond Sturmer, M.D. (Georgetown, 1968).

Assistant Professors: Edmond C. Bloch, M.B. (Univ. of Cape Town, South Africa, 1946); William D. Bradford, M.D. (Western Reserve, 1958); Y. T. Chen, M.D. (Taiwan Univ., 1973), Ph.D. (Columbia, 1978); Michael Freemark, M.D. (Duke, 1976); Nan Friedman, M.D. (Med. Coll. of Virginia, 1975); Patricia Gerber, M.D. (Wisconsin, 1976); Jeannine Gingras, M.D. (Vermont, 1978); William Greeley, M.D. (Texas at Houston, 1976); Harold J. Harris, M.D. (Long Island Coll. of Med., 1949); J. David Jones, M.D. (Duke, 1954); Stephen G. Kahler, M.D. (Duke, 1973); Raymond S. Kandt, M.D. (Virginia, 1976); Ronald Kanter, M.D. (Vanderbilt, 1979); Joanne Kurtzberg, M.D. (New York Med. Coll., 1976); M. Louise Markert, M.D., Ph.D. (Duke, 1982); Ross E. McKinney, M.D. (Rochester, 1979); Mary Ann Morris, M.D. (Arkansas, 1972); Jerry Oakes, M.D. (Duke, 1972); Karen O'Donnell, Ph.D. (North Carolina at Chapel Hill, 1983); Aglaia N. O'Quinn, M.D. (Duke, 1965); Michael O'Shea, M.D. (North Carolina at Chapel Hill, 1980); Shirley K. Osterhout, M.D. (Duke, 1957); M. Henderson Rourk, Jr., M.D. (Pennsylvania, 1963); Richard I. Schiff, M.D., Ph.D. (Duke, 1976); Nicholas Shorter, M.D. (Johns Hopkins, 1979); David Tanaka, M.D. (Johns Hopkins, 1979); Marjorie Tripp, M.D. (Yale, 1973); Robert J. Thompson, Jr., Ph.D. (North Dakota, 1971); Mary E. Vernon, M.D. (Columbia, 1976); Rita Vileisis, M.D. (Northwestern, 1975); Richard Wenstrup, M.D. (Cincinnati, 1978); Gordon Worley, M.D. (Harvard, 1973).

Associates: Edward G. Buckley, M.D. (Duke, 1977); Sara Chaffee, M.D. (Dartmouth, 1980); Robert Drucker, M.D. (Duke, 1979); Robert D. Fitch, M.D. (Duke, 1976); Elizabeth Kelley, M.D. (Indiana, 1976); John Moses, M.D. (Med. Univ. South Carolina, 1983); Catherine Rose, M.D. (West Virginia, 1981); Claire Selzer, Ph.D. (Kansas, 1983); Deborah Squire, M.D. (Northwestern, 1978); Delbert Wigfall, M.D. (Emory, 1979).

Visiting Medical Research Professor: Alan M. Poizner, M.D. (Kansas, 1960).

Consulting Professors: William J. A. DeMaria, M.D. (Duke, 1948); Thomas K. Oliver, M.D. (Harvard, 1949).

Associate Consulting Professors: Seymour Grufferman, M.D. (New York at Syracuse, 1964), Dr.P.H. (Harvard, 1979); William L. London, M.D. (North Carolina at Chapel Hill, 1955); Howard H. Loughlin, M.D. (Pennsylvania, 1970); A. W. Renuart III, M.D. (Duke, 1955); Evelyn Schmidt, M.D. (Duke, 1951).

Assistant Consulting Professors: Clarence Bailey, M.D. (North Carolina at Chapel Hill, 1955); Joanna S. Dalldorf, M.D. (Cornell, 1958); James S. Hall, M.D. (Duke, 1957); Alvin H. Hartness, M.D. (Bowman Gray, 1965); Thomas M. McCutchen, M.D. (Vanderbilt, 1963); Charles B. Neal, M.D. (Duke, 1955); Nicholas A. Patrone, M.D. (Loyola, 1976); John C. Pollard, M.D. (Virginia, 1968); William C. Powell, M.D. (Bowman Gray, 1952); Jimmie L. Rhyne, M.D. (Maryland, 1948); A. Douglas Rice, M.D. (Duke, 1951); James B. Rouse, M.D. (Duke, 1965); Robert J. Senior, M.D. (Jefferson, 1955); Frank S. Shaw, M.D. (Pennsylvania, 1959); Charles I. Sheaffer, M.D. (Western

Reserve, 1958); S. Winston Singleton, M.B. (Manchester, England, 1952); Fred R. Stowe, M.D. (North Carolina at Chapel Hill, 1958).

Consulting Associates: Lillis Altshuller, M.D. (Cincinnati, 1960); Yana Banks, M.D. (Bowman Gray, 1982); Meade R. Christian, Jr., M.D. (Western Reserve, 1967); Douglas Clark, M.D. (North Carolina at Chapel Hill, 1983); William G. Conley, M.D. (Med. Coll. of Virginia, 1960); W. LaDell Douglas, M.D. (Georgetown, 1974); Jean Findlay, M.B. (Aberdeen Univ. Med. Sch., Scotland, 1970); Gregory Fisher, M.D. (South Florida, 1976); Martha L. Gagliano, M.D. (Duke, 1982); Richard Gugelmann, M.D. (Texas at Galveston, 1971); Larry C. Harris, M.D. (Duke, 1977); Rufus McP. Herring, Jr., M.D. (Bowman Gray, 1969); Jennifer L. Lail, M.D. (Kentucky, 1978); Charles W. Lallier, M.D. (Virginia, 1981); Pierre LeMaster, M.D. (Florida, 1971); Larry Mumford, M.D. (North Carolina at Chapel Hill, 1967); Craig R. Stenberg, Ph.D. (Denver, 1982); Janice Stratton, M.D. (Tulane, 1961); Joseph Whatley (Duke, 1958).

Clinical Professor: W. Sam Yancey, M.D. (Duke, 1965).

Associate Clinical Professors: Allen Cato, M.D. (Duke, 1969); Deborah Kredich, M.D. (Michigan, 1962); Lois A. Pounds, M.D. (Pittsburgh, 1965).

Assistant Clinical Professors: Marcia Herman-Giddens, P.A. (Duke, 1968), M.P.H. (North Carolina at Chapel Hill, 1985); Ave Maria Lachiewicz, M.D. (Minnesota, 1980); Sandra Lehrman, M.D. (Brown, 1976); Christine Rudd, Pharm. D. (North Carolina at Chapel Hill, 1983); Robert W. Warren, M.D., Ph.D. (Washington Univ., 1978).

Clinical Associates: Norman B. Allard, Ph.D. (Cornell, 1984); Joanne Barton, M.Sc. (Kentucky, 1974); Mary Jane Burns, M.S.W. (North Carolina at Chapel Hill, 1974); Janice Bush, M.D. (Alabama, 1980); Pamela Carter, M.Ed. (North Carolina at Chapel Hill, 1976); Muki W. Fairchild, M.S.W. (North Carolina at Chapel Hill, 1976); Mary Ellen Isaacs, M.A. (Northwestern, 1979); Martha Ann Keels, D.D.S. (North Carolina at Chapel Hill, 1984); Allyn McConkie-Rosell, M.S.W. (Arkansas, 1980); Brandy McDaniel, M.S.W. (North Carolina at Chapel Hill, 1979); Mary Moggio, M.S.P.H. (North Carolina at Chapel Hill, 1972); Sally Robinson, Ph.D. (Peabody College, 1983); Lynn Rosenfeld, M.S.W. (Maryland, 1976); William Schultz, P.A. (Duke, 1981); Maxine Soloway, Ph.D. (North Carolina at Greensboro, 1985); A. William Taub, M.S.W. (North Carolina at Chapel Hill, 1981).

Medical Research Professor: James T. Lowman, M.D. (Arkansas, 1958).

Associate Medical Research Professor: David Millington, Ph.D. (Liverpool, England, 1969).

Assistant Medical Research Professors: Dianne Y. Bell, Ph.D. (North Carolina State, 1976); Paul Dolber, Ph.D. (Johns Hopkins, 1973); Nancy Henshaw, Ph.D. (North Carolina at Chapel Hill, 1983); Leslie Sargent Jones, Ph.D. (Northwestern, 1981); Randall Richards, Ph.D. (Duke, 1982).

Research Associates: Nancy Eby, Ph.D. (Johns Hopkins, 1986); Junken He, Ph.D. (Fu Dan Univ., Shanghai, 1968).

Instructors: Sarah Bolognesi, B.S.N. (Sage, 1964); Cynthia Hawkes, M.A. (Memphis State, 1980); James Heller, M.A. (Minnesota, 1980); Jean Livermore, M.S.W. (North Carolina at Chapel Hill, 1977); Jennifer McDowell, Ph.D. (Vanderbilt, 1981); Helen Moss, M.Ed. (Winthrop, 1976); Helen Roupas, M.S.W. (North Carolina at Chapel Hill, 1978); Valerie Stahl, M.A. (Humboldt, 1973).

Emeriti: Jay M. Arena, M.D.; William Cleland, M.D.; Susan C. Dees, M.D.; Jerome S. Harris, M.D.; Bailey D. Webb, M.D., Ph.D.

Required Course

PED-205. The basic course in pediatrics for all students is an eight-week clerkship in the second year. Its principal aim is to provide an exposure to the field of child health. The student has a varying series of experiences which should give a grasp of the concepts that underlie the discipline. Goals should be to acquire familiarity and competence with the basic tools of information-gathering the history, physical examination, and laboratory data and to develop an approach to the integration of this material for the solution of problems of health and illness in infancy, childhood, and adolescence. This should be accomplished with continuing reference to the basic principles of pathophysiology encountered in the first year courses.

Those patients to whom the student is assigned will provide the focus for case studies. In addition to the careful history and physical examination which must be recorded, the student is expected to organize an appropriate differential diagnosis and to seek and read pertinent reference material relevant to each patient. The student should learn to present each case verbally in an organized and succinct fashion, to follow the patient's progress, and to interpret all studies which are performed. The student is expected to learn from a number of sources: standard textbooks and journals, current publications and conferences, and also from people—house staff, faculty, nurses, parents, and all others with whom contact is made in the clinical setting.

Objectives should also include an understanding of the roles played in pediatrics by other members of the health care team, both in the ambulatory and hospital settings. Patient care may include nurse, social worker, recreation therapist, psychologist, phys-

iotherapist, dietitian, and/or others. The eight weeks will be divided to include time into several of the following settings: (a) Duke outpatient clinics and emergency room, (b) Duke inpatient, (c) Durham County General Hospital and (d) Duke nurseries, (e) community clinics and private pediatrician's offices.

Electives

PED-210(C). Advanced Pediatrics. There are a variety of possibilities. In advance of signing up for this course, arrangements are to be made with departmental division chiefs as appropriate to the student's interest. The departmental divisions and chiefs are: Allergy/Immunology, Rebecca Buckley, M.D.; Cardiology, Madison Spach, M.D.; Endocrinology, Stuart Handwerger, M.D.; Epidemiology, Seymour Grufferman, M.D.; General, Thomas E. Frothingham, M.D.; Genetics/Metabolism, Charles Roe, M.D.; Hematology/Oncology, John Falletta, M.D.; Infectious Diseases, Catherine Wilfert, M.D.; Nephrology, Jonathan Scheinman, M.D.; Neurology, Bernard D'Souza, M.D.; Perinatal Medicine, Jane Brazy, M.D.; Pulmonary/GI, Alexander Spock, M.D. Another option relates to several county health departments. On Monday through Thursday (four days a week) the student will travel with the pediatric senior resident to each of four rural county health departments in order to participate in the child health and pediatric activities in collaboration with public health nurses and child health clinicians. On the order of two hours a day driving time will permit a one-on-one tutorial with the senior resident. Requirements and restrictions: One student at a time, for a minimum of two weeks; before-the-course interviews with Ms. Joanne Barton, PNP (684-3172) and with Dr. Frothingham (684-6870). A short paper on some aspect of rural child health or pediatric medicine. Weight: 1-8. *Frothingham and staff*

PED-211(C). Pediatric Infectious Diseases. This course will provide experience in the clinical and laboratory diagnosis of infectious diseases and in their therapy. The student works closely with the infectious disease fellow and participates actively in evaluation of patients. Daily rounds in microbiology laboratory and participation in Monday infectious disease conferences are required. Prerequisites: Contact Dr. Wilfert prior to enrollment. Weight: 4-8. *Wilfert, McKinney, Gutman, Lehrman, and Katz*

PED-215(C). Endocrine Disorders in Children. Students participate in the pediatric endocrine and pediatric diabetes clinics and in the inpatient activities of the endocrine division. Students also participate in the endocrine journal club and interdepartmental endocrine conferences. Emphasis is placed on the evaluation of growth and sexual development as indices of endocrine status during childhood. Prerequisite: Contact instructors. Weight: 4 or 8. *Handwerger, Morris, Friedman, and Freemark*

PED-216(C). Interdisciplinary Seminar in Clinical Oncology. Students will be presented with a comprehensive review of clinical oncology, including the epidemiology, pathogenesis, clinical-pathologic correlations, treatment, and prognosis for most human cancers. Relationships between basic science aspects and clinical medicine will be emphasized. Weight: 2. *Falletta and Michalopoulos*

PED-217(C). Pediatric Hematology and Oncology. Includes all aspects of clinical and laboratory pediatric hematology, as well as the diagnostic valuation, care, and treatment of patients with malignant diseases. Emphasis will be placed on fundamental concepts. There will be daily ward rounds, three weekly clinics, conferences and seminars, as well as assigned reading. Students will be encouraged to engage in some individual clinical laboratory project during the period of the course. Prerequisite: contact instructor. Weight: 4 or 8. *Falletta, Kinney, Kurtzburg, and Friedman*

PED-221(C). Poison Control. Primarily a seminar course with one two-hour conference per week scheduled for student discussion on assigned topics. The student may participate in clinical functions of the center and if desired may be on call for the treat-

ment of these cases in the emergency room or the ward. This is a student-oriented teaching program and individual projects on the subject may also be carried out. Weight: 2. *Shirley Osterhout*

PED-225(C). Neonatology. Students will have patient care responsibilities and experiences in the Duke North Intensive Care Nursery. The course involve direct participation in patient care under the supervision of the faculty and house staff. Emphasis is placed on the initiation of parent-child relationships, and a pathophysiologic approach to assessment and management of the critically ill neonate. Student may not drop within sixty days of the starting date without finding a replacement. No other courses are to be taken in conjunction with PED-225(C). Weight: 4. *Brazey, Tanaka, O'Shea, Gingras, and Vileisis*

PED-227(C). Behavioral Aspects of Pediatrics. This course will offer trainees the opportunity to work as a part of an interdisciplinary team in diagnosing and treating children and adolescents (ages two to twenty-one) with a variety of psychiatric and psychosocial problems. Presenting problems might include: anorexia nervosa, bulimia, enuresis, encopresis, school phobia, psychosomatic disorders, tourette syndrome, suicidal and acting-out adolescents, chronically or terminally ill children, and child abuse and neglect cases. Trainees will be taught and will clinically apply principles of child and adolescent development and psychoanalytic family systems theory. The trainee will be involved in child, parent, and family interviews and treatment and will function as an integral part of the treatment team to experientially learn about the diagnosis and treatment of a wide variety of child and adolescent disorders. There will be an opportunity to be involved in the inpatient and outpatient treatment process on pediatric and adolescent psychiatric wards. (See also PSC-227(C).) Weight: 2-6. *Jones, Lee, Mrs. Pratt, and Mrs. Burns*

PED-231(C). Clinical Pediatric Cardiology. Provides an intensive learning experience in clinical diagnosis and management of childhood heart disease. Emphasis is placed on the preoperative and postoperative management of children with operable heart disease as well as upon the management of children with nonoperable heart disease. Finally, the student is exposed to pediatric acute care medicine and modalities available to maintain cardiovascular function in the extremely ill child. Scope: history, physical examination, and special diagnostic techniques (electrocardiography, phonocardiography, echocardiography, cardiac catheterization, and cineangiography). Students are urged to meet with one of the instructors prior to enrolling in this course. Prerequisites: PED-205(C). Weight: 8, 4 (only with special permission of instructors). *Armstrong and Anderson*

PED-233(C). Allergy and Clinical Immunology. Clinical evaluation and practice in use and methods of diagnosis and treatment of allergic and immunologic disorders including, the atopic diseases, immunologic deficiency states and bone marrow transplantation. Scope: history, physical examination, skin testing and a variety of clinical immunologic tests, and clinical research unit experience. Weight: 4 or 8. *R. Buckley, Schiff, Gerber, and Markert*

PED-234(C). Clinical Genetics and Metabolism. The student will become familiar with evaluation and management of various genetic disorders, including malformation syndromes and biochemical disorders. History taking, pedigree construction and analysis, diagnostic techniques, laboratory tests (cytogenetic, biochemical, DNA), genetic counseling and use of reference materials are emphasized. Experience in obstetrics (prenatal diagnosis) and internal medicine are available depending on the interests of the student. May take with BCH-234(B). Weight: 4. *Kahler*

PED-241(C). Pediatric Nephrology. Course is designed to provide experience in diagnosis, interpretations of laboratory tests, natural history, and treatment of acute and

chronic disorders of the kidney in children. Students are also exposed to the management of fluid and electrolyte disorders in infants and children. Prerequisites: Prior approval of Dr. Scheinman. Weight: 4 or 8. *Scheinman and Wigfall*

PED-243(C). Adolescent Medicine. Students will participate in a weekly seminar with emphasis on the behavioral and developmental aspects of adolescence, drug abuse, and the pregnant teenager. Patient interactions will be arranged depending on student time availability and clinic scheduling. Tutorial and supervisory time to discuss specific patients and pertinent literature will be arranged. Weight: 2. *Yancy and Fairchild*

PED-250(C). Advanced General Pediatrics, Pediatric Intensive Care Unit. This advanced course is designed to allow students a four-week experience as a subintern in the pediatric intensive care unit. Under supervision of faculty attendings and resident housestaff the senior student will assume primary responsibility for the care of critically ill children admitted to the medicine and surgery services in the pediatric intensive care unit. Emphasis will be placed on the development of a pathophysiologic approach to the diagnosis and therapy of a broad spectrum of pediatric illnesses as they present in acute care settings. Advanced concepts in pediatric critical care will be emphasized. Students will rotate night call with resident pediatric housestaff. Prerequisite: PED-205(C). Weight: 4. *Armstrong*

PED-264(C). Continuum of Care in Child Psychiatry. (Emphasis on inpatient care). The course consists of a supervised opportunity on Halsted and at the child guidance clinic to provide clinical care for children with a variety of behavioral, emotional, and developmental disorders. Collaboration with milieu team members in a multidisciplinary setting is emphasized. Participation in diagnostic and treatment conferences is an integral part of the experience. Weight: 4 or 8. *O'Quinn*

PED-281(C). Pediatric Neurology. Students will examine both hospitalized and ambulatory patients with neurological disorders. Emphasis is placed on the neurological history, examination, and the investigation and management techniques of nervous system disorders of infancy, childhood and adolescence. Prerequisites: Contact Dr. D'Souza. Weight: 8. *D'Souza*

Pharmacology

Professor Norman Kirshner, Ph.D. (Pennsylvania State, 1952), *Chairman*.

Professors: Mohamed Abou-Donia, Ph.D. (California at Berkeley, 1966); James Norman Davis, M.D. (Cornell, 1965); Everett H. Ellinwood, M.D. (North Carolina at Chapel Hill, 1959); Leon Lack, Ph.D. (Columbia, 1953); Daniel B. Menzel, Ph.D. (California at Berkeley, 1962); Elliott Mills, Ph.D. (Columbia, 1964); Athos Ottolenghi, M.D. (Univ. of Pavia, 1946); Gerald M. Rosen, Ph.D. (Clarkson, 1969); Saul M. Schanberg, M.D. (Yale, 1964), Ph.D. (Yale, 1961); Theodore Slotkin, Ph.D. (Rochester, 1970); Harold C. Strauss, M.D., C.M. (McGill Univ., 1964) Walter D. Watkins, Ph.D. (Michigan, 1971), M.D. (Colorado, 1975); Pelham Wilder, Ph.D. (Harvard, 1950).

Associate Professors: Laura E. Gutman, M.D. (Stanford, 1962); Cynthia M. Kuhn, Ph.D. (Duke, 1975); James O. McNamara, Sr., M.D. (Michigan, 1968); Julian Victor Nadler, Ph.D. (Yale, 1972); Charles B. Nemeroff, Ph.D. (North Carolina at Chapel Hill, 1976), M.D. (North Carolina at Chapel Hill, 1981); A. Richard Whorton, Ph.D. (Vanderbilt, 1975).

Assistant Professors: Warner M. Burch, Jr., M.D. (Bowman Gray, 1971); Clinton D. Kilts, Ph.D. (Michigan State, 1979); James E. Nidel, M.D. (Miami, 1973), Ph.D. (Miami, 1974); Rochelle D. Schwartz, Ph.D. (Georgetown, 1983); Stephen C. Strom, Ph.D. (Kansas, 1978).

Medical Research Professor: Gertrude Elion, D.Sc. (George Washington, 1969).

Medical Research Associate Professor: Wilkie A. Wilson, Ph.D. (Duke, 1971).

Medical Research Assistant Professors: Jorge Bartolome, Ph.D. (Univ. of Chile, 1978); Joanne M. Bell, Ph.D. (Washington Univ., 1983); Daniel M. Lapadula, Ph.D. (New York Univ., 1981); Frederic J. Seidler, Ph.D. (Duke, 1986); Ying-Fu Su, Ph.D. (Colorado, 1978); Robert L. Wolpert, Ph.D. (Princeton, 1976).

Adjunct Professors: Kwen-Jen Chang, Ph.D. (New York at Buffalo, 1972); Pedro Cuatrecasas, M.D. (Washington Univ., 1962); James E. Gibson, Ph.D. (Iowa, 1969); Robert A. Neal, Ph.D. (Vanderbilt, 1963).

Adjunct Associate Professors: Neil Chernoff, Ph.D. (Miami, 1969); Donald E. Gardner, Ph.D. (Cincinnati, 1971); Humberto Viveros, M.D. (Univ. of Chile, 1962).

Adjunct Assistant Professors: Richard J. Kavlock, Ph.D. (Miami, 1977); Christopher Lau, Ph.D. (Duke, 1982). Emeritus: Frederick Bernheim, Ph.D.

Required Course

PHR-200. Pharmacology: Mode of Action of Drugs. A basic course in pharmacology describing the action of drugs in terms of biochemical and physiological processes, and the rationale for their use in clinical therapy. Four lectures, one clinical correlation and one conference per week. 4 units. *Staff*

Electives

PHR-219(B). Tutorial in Pharmacology. Guided independent study of original literature and/or laboratory experience. Open to all students; required of those electing a preclinical base in the Department of Pharmacology. Weight: 1-8. *Staff*

PHR-256(B). Human Nutrition. Principles of nutrition related to clinical practice. Emphasis will be placed on the essentials of nutrition using human disease states and maturation (reproduction, growth, and aging) as a basis for instruction. Topics will include nutritional requirements during pregnancy, lactation, infancy, and old age; metabolic disorders and diseased states. A major section will include the use of parenteral nutrition in the treatment of cancer. Weight: 3. *Menzel*

PHR-270(B). Neurobiology I. Also listed as PHS-270(B). Weight: 3. *Moore, Kirshner, Costello, Corless, and Schweitzer*

PHR-330(B). Pharmacological Basis of Clinical Medicine. This course consists of a detailed analysis of the mechanism of action and rationale for use of pharmacologic agents in disease states. Weight 4. *Bjornsson and staff*

PHR-331(B). Laboratory Methods in Pharmacology. Prerequisites: permission of instructor. Weight: 6. *Staff*

PHR-333(B). Principles of Pharmacology and Toxicology 1. Drug absorption, distribution, excretion and metabolism, basic and clinical pharmacokinetics, Hansch correlation of structure and activity, stereo-chemistry, and drug action. Offered in alternate years. Weight: 3. *Slotkin and staff*

PHR-334(B). Principles of Pharmacology and Toxicology 2. Drug receptor theory and its practical applications, pharmacokinetics and pharmacodynamics of toxic substances, mechanisms of toxicity, adverse drug reactions and interactions. Prerequisites: PHR 333 or permission of instructor. Weight: 3. *Rosen and staff*

PHR-350(B). Neurobiology of Diseases. Disorders of the nervous system will be discussed by panels of clinicians and basic scientists. Sessions will be divided into equal periods of clinical presentation, scientific analysis and free discussion with student participation. Prerequisites: ANA 200, ANA 201, PHS 200, PHS 202 or equivalents. Weight: 3. *Somjen and staff*

PHR-354(B). Mammalian Toxicology. Principles of toxicology as related to man. Emphasis will be placed on the molecular basis for toxicity of chemical and physical agents. Subjects will include metabolism and toxicokinetics; toxicologic evaluation; pesticides; metals and industrial chemicals, solvent toxicity, food additives and natural toxins; radiation and radioactive materials; mutagenicity, pathology, carcinogenicity, immunology, teratogenicity; reproductive system; pulmonary, liver, kidney, eye, blood, behavioral cardio- and neurotoxicology; management of poisoning, epidemiology, risk assessment, and regulatory toxicology. Taught in alternate years in the spring semester. Weight: 4. *Abou-Donia and staff*

PHR-360(B). Neuropharmacology. Seminar-lecture course emphasizing neuro-transmitter mechanisms and the mechanism of action of drugs used to modify nervous system function. Material will be drawn from the recent literature. Offered in alternate years. Weight: 3. *Nadler*

PHR-364(B). Neurotoxicology. Adverse effects of drugs and toxicants on the central and peripheral nervous system. Target sites, pathophysiology, and factors affecting toxicity. Experimental methods for detection and screening of neurotoxic chemicals. Screening and assessment of neurotoxicity in people. Weight: 3. *Abou-Donia*

PHR-372(B). Research in Pharmacology. Laboratory investigation in various areas of pharmacology. Credit to be arranged. *Staff*

PHR-417(B). Cellular Endocrinology. Current concepts of the mechanisms of action of hormones at the cellular level; including hormone-receptor interactions; secondary messenger, regulation of protein synthesis, growth and differentiation, control of salt and water balance, regulation of substrate storage and mobilization, modulation of hormone secretion. Weight: 2. *Caron, N. Anderson, Padilla, and guest faculties*

PHR-423(B). Neurobiological Basis of Behavior. The course surveys neuroanatomical, neurophysiological, neurochemical, and neuropharmacological evidence of central nervous system function as it relates to normal and abnormal behavior. Clinical description, measurement of function, as well as the biological substrates of affective disorders and psychoses, will be emphasized. Scientific bases of current therapeutic procedures, especially psychopharmacological, will be examined. Prerequisite: Familiarity with basic neuroanatomy, neurophysiology, and neuropharmacology is assumed. Weight: 4. *Ellinwood and staff*

Physiology

Professor: James B. Duke Professor Edward A. Johnson, M.D. (Univ. of Sheffield, 1953), *Chairman*.

Professors: James B. Duke Professor Jacob J. Blum, Ph.D. (Chicago, 1952); Irving T. Diamond, Ph.D. (Chicago, 1953); John W. Gutknecht, Ph.D. (North Carolina at Chapel Hill, 1963); Diane Hatchell, Ph.D. (Marquette, 1968); Frans F. Jobsis, Ph.D. (Michigan, 1958); Melvyn Lieberman, Ph.D. (State Univ. of New York, 1964); Lazaro J. Mandel, Ph.D. (Pennsylvania, 1969); John W. Moore, Ph.D. (Virginia, 1954); George M. Padilla, Ph.D. (California at Los Angeles, 1960); Robert Plonsey, Ph.D. (California, 1956); Jacqueline A. Reynolds, Ph.D. (Washington Univ., 1963); Sidney Simon, Ph.D. (Miami, 1973); George G. Somjen, M.D. (New Zealand, 1961); Joachim R. Sommer, M.D. (Munich, 1951); Madison S. Spach, M.D. (Duke, 1954); James B. Duke Professor Charles Tanford, Ph.D. (Princeton, 1947).

Associate Professors: Onyekwere Akwari, M.D. (Southern California, 1970); Nels C. Anderson, Ph.D. (Purdue, 1964); Peter B. Bennett, Ph.D. (Univ. of Southampton, 1964); Celia Bonaventura, Ph.D. (Texas at Austin, 1968); Joseph Bonaventura, Ph.D. (Texas at Austin, 1968); Marc G. Caron, Ph.D. (Miami, 1973); Robert P. Erickson, Ph.D. (Brown, 1958); Joseph C. Greenfield, M.D. (Emory, 1956); J. Mailen Kootsey, Ph.D. (Brown, 1966); J. A. Kylstra, M.D. (Leiden, Holland, 1952); Thomas J. McManus, M.D. (Boston, 1955); Elliott Mills, Ph.D. (Columbia, 1964); Michael K. Reedy, M.D. (Washington, 1973); David W. Schomberg, Ph.D. (Purdue, 1965); Steven Vigna, Ph.D. (Washington, 1978); Myron Wolbarsht, Ph.D. (Johns Hopkins, 1958).

Assistant Professors: Page A. W. Anderson, M.D. (Duke, 1963); Robert R. H. Anholt, Ph.D. (California, 1982); Enrico M. Camporesi, M.D. (Univ. of Milan, Italy, 1970); Vincent W. Dennis, M.D. (Georgetown, 1966); Marc K. Drezner, M.D. (Pittsburgh, 1970); Stuart Handwerker, M.D. (Maryland, 1964); Ann LeFurgey, Ph.D. (North Carolina at Chapel Hill, 1976); Darrell V. Lewis, Jr., M.D. (Minnesota, 1969); J. Scott Rankin, M.D. (Tennessee, 1969); Judith L. Swain, M.D. (California at San Diego, 1974); Andrew G. Wallace, M.D. (Duke, 1959); Andrew Wechsler, M.D. (State Univ. of New York, 1964); Robert Sanders Williams, M.D. (Duke, 1973); William E. Yarger, M.D. (Baylor, 1971).

Medical Research Associate Professors: Michael C. Kohn, Ph.D. (South Carolina, 1969); Avis Sylvia, Ph.D. (North Carolina at Chapel Hill, 1973).

Assistant Medical Research Professors: Peter G. Aitken, Ph.D. (Connecticut, 1978); Gilbert Baumann, Dr.Sc. (Swiss Federal Inst. of Tech., 1968); Michael Douglas Feezor, Ph.D. (North Carolina at Chapel Hill, 1969); Wayne A. Gerth, Ph.D. (California at San Diego 1979); Michael Hines, Ph.D. (Chicago, 1975); Bruce Maurice Klitzman, Ph.D. (Virginia, 1979); Alan Magid, Ph.D. (Washington, 1974); Joseph Stimers, Ph.D. (Southern California, 1982).

Adjunct Professors: Vladimir Petrow, D.Sc. (Univ. of London, 1947); Kenneth Sugioka, M.D. (Washington Univ., 1949).

Adjunct Associate Professors: Russell Horres, Ph.D. (Duke, 1975); James M. Schooler, Jr., Ph.D. (Wisconsin, 1964).

Adjunct Assistant Professors: Thomas W. Anderson, Ph.D. (Duke, 1971); Reginald D. Carter, Ph.D. (Bowman Gray, 1970).

Required Courses

PHS-200. Medical Physiology. Lectures and conferences on cell and organ physiology. Human and medical aspects are stressed in clinical conferences. Required of first-year medical students; limited to other students whose training requires knowledge of human physiology as it pertains to medicine. Lectures, conferences, and small group discussions each week. Prerequisite: consent of course leader. 5 units. *Padilla and staff*

PHS-202. Basic Neurobiology. An integrated interdepartmental course designed for first-year medical students and other professional and graduate students who need a core course on the morphology and functions of the mammalian nervous system. Lectures, laboratory demonstrations, clinical conferences, and lecture conferences during the month of January only. Prerequisites: ANA 200, ANA 201, BCH 200, and PHS 200 or equivalents. C-L: ANA 202, BCH 202. 4 units. *Somjen, Hall, Kirshner, and staff*

Electives

PHS-217(B). Membrane Transport. Basic principles of the transport of water and solutes across biological and model membranes. The course uses physicochemical principles to provide a comprehensive understanding of phenomena such as active and passive transport, energy barriers through membranes, surface effects, and ion selectivity. The methodology and conceptual framework for the study of transport is described with selected examples from bilayers, red blood cells, nerve and epithelia. Physical chemistry is recommended. Prerequisites: Consent of instructor. Weight: 3. *Mandel and Simon*

PHS-219(B). Preceptorship in Physiology. Guided independent study of original literature and/or research experience in physiology. Prerequisites: Consent of instructor and of departmental professional advisor. Weight: 1 to 18. *Padilla and staff*

PHS-222(B). Respiratory System in Health and Disease. Primary emphasis is on the physiology of respiration. Topics covered include pulmonary mechanics; gas exchange; ventilation-perfusion relationships; central and peripheral regulation of ventilation; and respiratory responses to exercise, altitude, and hyperbaric environments. Weight: 2. *Camporesi and Kylstra*

PHS-225(B). Neurobiology of Sensory Systems. This interdisciplinary course will focus on several principles involved in the structure, biochemistry, and electrophysiology of sensory systems. The major focus will be in the visual system with lesser emphasis on auditory, gustatory, olfactory, and somatic-sensory (pain, touch, pressure) systems. The systems will be examined from the receptor to the cortical levels. Weight: 3. *Simon, Corless, and staff*

PHS-270(B). Neurobiology. Interdisciplinary approach to neuronal function at the cellular and molecular levels. Topics will include: subcellular structural organization, physiology and pharmacology of excitable membranes, impulse generation and conduction, neurotransmitters, proteins, pre- and postsynaptic organization and function. Weight: 3. *Corless, Costello, Kirshner, and J. W. Moore*

PHS-320(B). Gastrointestinal Physiology. In this course the normal physiology, mechanisms of control, and transport characteristics of the human gastrointestinal tract and its associated glands (salivary, pancreas, liver) are presented. The mechanisms of secretion and reabsorption are treated at a cellular level. Clinical examples are presented to contrast normal function with pathophysiology. Weight: 2. *Mandel, Akwari, and staff*

PHS-321(B). Renal Physiology. The composition and size of body fluid compartments and the regulation of the constituents of the plasma by the kidney is presented by lectures. Measurements of renal function including renal blood flow, tubular reabsorption and secretion, and acid-base regulation are discussed together with the the-

ory of counter current exchange, ion transport in the kidney and hormonal control of renal function. Weight: 2. *Staff*

PHS-350(B). Neurobiology of Diseases. Disorders of the nervous system will be discussed by panels of clinicians and basic scientists. Sessions will be divided into equal periods of clinical presentation, scientific analysis and free discussion with student participation. Prerequisites: ANA 200, ANA 201, PHS 200, PHS 202 or equivalents. Weight: 3. *Somjen and staff*

PHS-401(B). Metabolic Physiology. The control of gluconeogenesis, protein degradation, the storage and mobilization of glycogen and of lipids will be examined both at cellular level (e.g., metabolite compartmentation, futile cycling, enzyme modification) and in terms of interactions between tissues such as liver, kidney, and muscle. Strategies for metabolic adaptation to exercise, cold environment, starvation, obesity, and birth will be discussed. Prerequisites: Physiology 204 or equivalent, one year of biochemistry. Weight: 3. *Blum*

PHS-411(B). Molecular and Cellular Bases of Differentiation. Emphasis is placed on the biochemistry of the cell surface as the basis of cell recognition, control of cell cycle, and overall tissue organization. An analysis of protein nucleic acid interactions in chromosome structure and function are considered in light of new concepts of transcriptional and translational control. Studies also include nuclear cytoplasmic interactions as well as hormone induction of differentiation and development. The course is designed to study the phenomena of development and differentiation and has been organized on a multidisciplinary level. The course is part of the lecture series of molecular and cellular basis of differentiation study program, MCD-301(B). Prerequisites: Permission of instructor. Weight: 3-4. *Padilla, McCarty, Counce, and Kaufman*

PHS-417(B). Cellular Endocrinology. Also listed as PHR-417B. Current concepts of the mechanisms of action of hormones at the cellular level; including hormone-receptor interactions; second messenger systems for hormones; structure and molecular biology of receptors, ion channels, G-proteins and other components of signal transduction systems; mechanisms of regulation of hormone responsiveness; regulation of growth, differentiation and proliferation; cellular and electrophysiological mechanisms of secretory stimulus sensing and transduction; systems approach to feedback regulation and information transfer in an endocrine system. Lectures by local and outside clinical faculty will stress the clinical correlation of the basic concepts elaborated in the course. Students will be expected to participate in one seminar presentation. Weight: 2. *Caron, N. Anderson, and Padilla*

PHS-418(B). Reproductive Biology. An in-depth study of male and female reproductive processes including hypothalamic, pituitary, and gonadal control mechanisms as well as the physiology of pregnancy and parturition. Lectures by guest clinical faculty will emphasize the interface between basic science and clinical aspects. The lecture material in each section of the course is followed by seminar presentations which will contribute to ANA/PHS-424, a corequisite for the course. Also listed as ANA-418(B). Weight: 2. *N. Anderson, Schomberg, and Tyrey*

PHS-424(B). Reproductive Biology. Selected topics in reproductive biology will be chosen for in-depth reading and analysis in the seminar format. The seminar is to be taken as a corequisite with ANA/PHS 418. (Also listed as Anatomy 424). Weight: 1. *Anderson, Schomberg, and Tyrey*

Psychiatry

Professors: Bernard J. Carroll, B.M., B.S. (Univ. of Melbourne, 1964); Ph.D. (Univ. of Melbourne, 1971), *Chairman*; Frederick T. Melges, M.D. (Columbia, 1961), *Vice-Chairman*.

DIVISION OF BIOLOGICAL PSYCHIATRY

Professor: Bernard J. Carroll, B.M., B.S. (Univ. of Melbourne, 1964), Ph.D. (Univ. of Melbourne, 1971), *Acting Head of Division*.

Professors: James B. Duke Professor H. Keith H. Brodie, M.D. (Columbia, 1965); Everett H. Ellinwood, Jr., M.D. (North Carolina at Chapel Hill, 1959); C. William Erwin, M.D. (Texas, 1960); Roy J. Mathew, M.B. (Med. Coll. of Trivandrum, India, 1970); Saul M. Schanberg, M.D., Ph.D. (Yale, 1964); Theodore A. Slotkin, Ph.D. (Rochester, 1970); William K. Zung, M.D. (Texas, 1961).

Consulting Professor: Richard J. Wyatt, M.D. (Johns Hopkins, 1964).

Associate Professors: Jonathan Davidson, M.D. (Univ. Coll., London, 1976); Veli Markku Linnoila, M.D., Ph.D. (Helsinki, 1972); Steven Lipper, M.D., Ph.D. (Boston, 1972); Charles B. Nemeroff, M.D., Ph.D. (North Carolina at Chapel Hill, 1981); Richard Weiner, M.D., Ph.D. (Duke, 1973).

Assistant Professors: Garth Bissette, Ph.D. (North Carolina State, 1982); C. Edward Coffey, M.D. (Duke, 1979); Clinton D. Kilts, Ph.D. (Michigan, 1979); K. R. R. Krishnan, M.D. (Madras Med. Coll., 1978); Rochelle Schwartz, Ph.D. (Georgetown, 1983); Daniel C. Sullivan, M.D. (Vermont, 1970).

Assistant Consulting Professors: P. K. George, M.D., Ph.D. (All India Inst., 1969); Joseph A. Johnston, Pharm. D. (Tennessee, 1976).

Adjunct Associate Professor: Jau-Shyon Hong, Ph.D. (Kansas, 1973).

Assistant Medical Research Professor: Scott T. Cain, Ph.D. (Northwestern, 1985).

Associate: J. Sidney Jones, M.D. (Bowman Gray, 1980).

Clinical Associates: Ursula Goebels, M.A. (Illinois, 1983); Merry N. Miller, M.D. (Tennessee, 1983).

Consulting Associate: Ugo Goetzl, M.D. (New York Med. Coll., 1968).

Research Associates: Gregory N. Ervin, Ph.D. (North Carolina at Chapel Hill, 1981); Samir K. Gupta, Ph.D. (West Virginia, 1986); J. Ken Nishita, Ph.D. (New York, 1983); Arlene Nikaido, Ph.D. (Hawaii, 1982); Ashkok-kumar P. Pillai, M.D. (Thanjavur Medical College, India, 1978); Vasundhara Putcha, M.D. (Osmania Medical College, India, 1983).

DIVISION OF CHILD AND ADOLESCENT PSYCHIATRY

Professor: John G. Looney, M.D. (Southwestern, 1969), *Head of Division*.

Visiting Research Professor: Robert Coles, M.D. (Columbia, 1954).

Associate Professors: Harold J. Harris, M.D. (Long Island Med. Coll., 1949); J. David Jones, M.D. (Duke, 1954); Charles R. Keith, M.D. (Harvard, 1961).

Associate Clinical Professor: W. Sam Yancy, M.D. (Duke, 1961).

Assistant Professors: Marcelino Amaya, M.D. (Univ. Nacional Autonoma de Mexico, 1954); William B. Anderson, M.D. (Minnesota, 1948); James E. Lee, M.D. (Duke, 1979); Aglaia N. O'Quinn, M.D. (Duke, 1965).

Assistant Consulting Professor: Cesar Guajardo, M.D. (Univ. de Nuevo Leon, Mexico, 1961).

Associate: George W. Griffin, Ph.D. (North Carolina at Chapel Hill, 1984).

Clinical Associates: Lucy T. Davis, Ed.D. (Columbia, 1955); Donald L. Rosenblitt, M.D. (Duke, 1973).

Consulting Associates: Linwood R. Allsbrook, M.D. (Kentucky, 1981); Mary E. Berman, M.D. (Michigan State, 1977); Thomas C. Cornwall, M.D. (Northwestern, 1970); Barbara Denny, M.S.W. (North Carolina at Chapel Hill, 1975); Carl S. Hesselbart, A.C.S.W. (Michigan, 1980); Nancy J. Livingston, M.D. (Duke, 1972); William Mackey, M.D. (Tennessee, 1969); Daniel T. Matthews, M.D. (Texas at Galveston, 1967); Daphne Rosenblitt, M.D. (Duke, 1974); Jean G. Spaulding, M.D. (Duke, 1972).

Instructors: Etta Leathers, M.E. (North Carolina Central, 1974); Alice F. Long, M.A. (Chicago, 1953); Joseph J. Simmons, M.A. (North Carolina Central, 1982); Barbara J. Smith, M.Ed. (North Carolina Central, 1983).

DIVISION OF INPATIENT SERVICES

Professor: Frederick T. Melges, M.D. (Columbia, 1961), *Head of Division*.

Professors: Frederick R. Hine, M.D. (Yale, 1949); John M. Rhoads, M.D. (Temple, 1943).

Associate Consulting Professor: Pedro J. Irigaray, M.D., (Univ. Nacional Autonoma de Mexico, 1955).

Assistant Professors: Elliott B. Hammett, M.D. (Duke, 1966); Ervin Thompson, M.D. (Vanderbilt, 1972).

Clinical Assistant Professor: Christine Machemer, M.D. (Univ. of Freiburg, 1959).

Assistant Consulting Professors: Jack W. Bonner III, M.D. (Southwestern, 1965); George W. Doss, M.D. (Southwestern, 1954); Eric Peterson, M.D. (Duke, 1971); Ingrid B. Pisetsky, M.D. (Albert Einstein, 1971); Leo Potts, M.D. (Univ. of Adelaide, 1954); Richard Selman, M.D. (Emory, 1972); William J. Shamblin, M.D. (Alabama, 1971); Cynia B. Shimm, M.D. (Yale, 1950); William Taylor, M.D. (Med. Coll. of Virginia, 1959).

Associates: Krishnaiah Rayasam, M.D. (Andhra Medical College, India, 1973); Linda H. Roghelia, B.S. (Campbell Coll., 1968).

Clinical Associates: Joseph M. Cools, M.D. (Michigan, 1979); Jacqueline J. Maus, M.D. (Texas at Houston, 1983).

Consulting Associates: Joanna Gaworowski, M.D. (Med. Academy, Warsaw, Poland, 1967); Duncan McEwen, M.D. (Tulane, 1982); Roger Perilstein, M.D. (Temple, 1982); Ernest Raba, M.D. (Texas, 1972); Roy M. Stein, M.D. (Duke, 1980); Ronald L. Vereen, M.D. (Duke, 1985).

Consulting Associate Psychiatric Nursing: Patricia Webster, M.S.N. (North Carolina at Chapel Hill, 1976).
Instructor: Edward K. Bridges, M.D. (North Carolina at Chapel Hill, 1978).

GEROPSYCHIATRY

Professors: Daniel T. Gianturco, M.D. (Buffalo, 1960); Adriaan Verwoerd, M.D. (Univ. of Amsterdam, 1952); Hsio-shan Wang, M.D. (National Taiwan Univ., 1953); Alan D. Whanger, M.D. (Duke, 1956).

DIVISION OF MEDICAL PSYCHOLOGY

Professor: Robert J. Thompson, Ph.D. (North Dakota, 1971), *Head of Division*.

Professors: Irving A. Alexander, Ph.D. (Princeton, 1949); Robert C. Carson, Ph.D. (Northwestern, 1957); Edward Clifford, Ph.D. (Minnesota, 1957); W. Edward Craighead, Ph.D. (Illinois, 1970); Herbert F. Crovitz, Ph.D. (Duke, 1970); Martin Lakin, Ph.D. (Chicago, 1955); Susan Schiffman, Ph.D. (Duke, 1970); Richard Surwit, Ph.D. (McGill, 1972); Robert J. Thompson, Ph.D. (North Dakota, 1971); Jay M. Weiss, Ph.D. (Yale, 1967).

Consulting Professor: Darwin Dorr, Ph.D. (Florida State, 1969).

Adjunct Professor: Florence Kaslow, Ph.D. (Bryn Mawr, 1969).

Associate Professors: James Blumenthal, Ph.D. (Washington, 1975); Elaine K. Crovitz, Ph.D. (Duke, 1964); V. Kay Hodges, Ph.D. (Maryland, 1974); Francis J. Keefe, Ph.D. (Ohio, 1975); Patrick Logue, Ph.D. (North Dakota, 1965); Gail R. Marsh, Ph.D. (Iowa, 1968); Robert Shipley, Ph.D. (Michigan State, 1972); Derek Shows, Ph.D. (Duke, 1967); Ilene Siegler, Ph.D. (Syracuse, 1973); William H. Wilson, Ph.D. (Vanderbilt, 1973).

Associate Clinical Professors: Jack D. Edinger, Ph.D. (Virginia Commonwealth, 1971); Nancy Johnson-Martin, Ph.D. (North Carolina at Chapel Hill, 1961).

Adjunct Associate Professor: Paul T. Costa, Jr. Ph.D. (Chicago, 1970).

Associate Consulting Professor: Lenore Behar, Ph.D. (Duke, 1973).

Associate Medical Research Professor: Gerda Fillenbaum, Ph.D. (London, 1966).

Assistant Professors: Norman B. Anderson, Ph.D. (North Carolina at Greensboro, 1983); John Curry, Ph.D. (Catholic Univ., 1978); Karen M. Gil, Ph.D. (Western Virginia, 1985); Steven Herman, Ph.D. (Duke, 1977); John S. Jordan, Ph.D. (Ohio State, 1984); John E. Lochman, Ph.D. (Connecticut, 1976); Karen O'Donnell, Ph.D. (North Carolina at Chapel Hill, 1983); Clive Robins, Ph.D. (New York State, 1982); Anna L. Stout, Ph.D. (South Carolina, 1980); Russell F. Tomlinson, Ph.D. (Florida, 1957); Kathleen A. Welsh, Ph.D. (Virginia, 1985).

Assistant Clinical Professors: John Barrow, Ph.D. (Houston, 1971); Tracey Potts Carson, Ph.D. (Georgia, 1982); Mark Feinglos, M.D. (McGill, 1973); Timothy J. Hoelscher, Ph.D. (Memphis State, 1984); Martin Ionescu-Pioggia, Ph.D. (North Carolina at Chapel Hill, 1985); Ronette L. Kolotkin, Ph.D. (Minnesota, 1978); Rodney L. Lowman, Ph.D. (Michigan State, 1979); Richard Lucas, Ph.D. (North Carolina at Chapel Hill, 1972); Joseph E. Talley, Ph.D. (Virginia, 1977).

Adjunct Assistant Professors: Ralph Cooper, Ph.D. (Rutgers, 1973); James A. Green, Ph.D. (North Carolina at Chapel Hill, 1979).

Adjunct Assistant Medical Research Professor: Sandra Funk, Ph.D. (North Carolina at Chapel Hill, 1976).

Assistant Consulting Professors: William D. Barley, M.D. (Texas Tech., 1980); Louise Lampron, Ph.D. (Tennessee, 1983); Belinda R. Novik, Ph.D. (Michigan State, 1978).

Assistant Medical Research Professors: John Barefoot, Ph.D. (North Carolina at Chapel Hill, 1968); James Lane, Ph.D. (California at Los Angeles, 1979); David Madden, Ph.D. (California at Davis, 1977); James A. McCubbin, Ph.D., (North Carolina at Chapel Hill, 1980); Peter E. Simson, Ph.D. (New York Univ., 1984).

Clinical Associates: Hendey Buckley, Ph.D. (Duke, 1980); Mary Luckhardt, Ph.D. (Connecticut, 1978); Sally Robinson, Ph.D. (Peabody, 1983); Henry Roth, Ph.D. (Duke, 1977); Richard R. Rumar, Ph.D. (North Carolina at Chapel Hill, 1982); Thomas Stearns, Ph.D. (Florida State, 1980).

Instructors: Joseph Kertesz, M.A. (Michigan, 1973); Brian Stabler, Ph.D. (North Carolina at Chapel Hill, 1973); Steven Weincrot, Ph.D. (Denver, 1979).

Research Associates: Miriam Clifford, Ph.D. (Duke, 1970); Kim Hamlett, Ph.D. (Duke, 1987); Judy K. Plemons, Ph.D. (Pennsylvania State, 1981); Prudence Simson, Ph.D. (New York Univ., 1984).

DIVISION OF OUTPATIENT SERVICES

Professor: Jesse O. Cavenar, Jr., M.D. (Arkansas, 1963), *Head of Division*.

Professor: David S. Werman, M.D. (Lausanne, Switzerland, 1952).

Associate Professor: David M. Hawkins, M.D. (Duke, 1966).

Assistant Consulting Professors: Martin G. Groder, M.D. (Columbia, 1964); Robert D. Phillips, M.D. (Pennsylvania, 1952); Karl W. Stevenson, M.D. (Bowman Gray, 1966); Robert M. Wells, M.D. (Tulane, 1954).

Associates: Harold S. Kudler, M.D. (State Univ. of New York, 1979); Steven Mahorney, M.D. (Louisiana, 1973).

Clinical Associates: Peter F. Adland, M.D. (Georgetown, 1975); Diana Jo Antonacci, M.D. (Southern Illinois, 1982); Ernest R. Braasch, M.D. (State Univ. of New York, 1970); Lawrence Champion, M.D. (Wisconsin, 1973); George R. Martin, M.D. (South Carolina, 1974); Frank B. Miller, M.D. (Michigan, 1974); Peter Z. Perault,

M.D. (Vermont, 1977); Erin G. Russell, M.D. (Louisville, 1980); Nathan R. Strahl, M.D. (North Carolina at Chapel Hill, 1983); David M. Susco, M.D. (Pennsylvania State, 1983); James S. Wells, Jr., M.D. (North Carolina at Chapel Hill, 1977); Floyd C. Wiseman, M.D. (Texas at Houston, 1982).

Instructor: Thomas Stephenson, M.D. (Michigan, 1972).

DIVISION OF PSYCHOSOMATIC MEDICINE

Professor: Redford B. Williams, Jr., M.D. (Yale, 1967).

Associate Professor: Allan A. Maltbie, M.D. (Emory, 1969).

Associate Clinical Professor: Harold R. Silberman, M.D. (Washington Univ., 1956).

Assistant Professor: Doug Finestone, M.D. (Med. Coll. of Virginia, 1979).

Assistant Clinical Professors: Conrad Fulkerson, M.D. (Missouri, 1969); Indira Varia, M.D. (Sha Med. College of India, 1968); Patricia A. Ziel, M.D. (Michigan, 1968).

Medical Research Assistant Professors: Patricia Cotanch, Ph.D. (Pittsburgh, 1979); Syam Sundar, Ph.D. (India Inst., 1978).

Associates: Anne G. Tyson, M.D. (North Carolina at Chapel Hill, 1982); Michael Volow, M.D. (Seton Hall, 1964); Michael D. Webb, M.D. (Texas at San Antonio, 1981).

Clinical Associates: Elizabeth H. King, M.D. (Duke, 1958); Linda H. Rubin, M.P.H. (North Carolina at Chapel Hill, 1978).

Consulting Associates: Bruce Neeley, M.D. (Med. Coll. of South Carolina, 1975); James R. Weiss, M.D. (Louisiana, 1973); Robert Winston, M.D. (Vanderbilt, 1972).

Research Associate: Thomas L. Haney, M.S.P.H. (North Carolina at Chapel Hill, 1978).

Visiting Associate: Motoyasu Muranaka, M.D. (Univ. Tohoku, 1981).

DIVISION OF PSYCHIATRIC SOCIAL WORK

Assistant Professor: Joanne Turnbull, Ph.D. (Michigan, 1985), *Head of Division*.

Assistant Professor: Lisa Gwyther, M.S.W. (Case Western Reserve, 1969).

Associates: Judith A. Carroll, M.S.S.W. (Wisconsin, 1986); Maxine R. Flowers, M.S.W. (Columbia, 1964); Yoshie Gordon, M.S.W. (Simmons, 1978); Stephen Hawthorne, M.S.W. (California, 1974); Diane E. Meglin, L.C.S.W. (Yeshiva, 1982); William S. Meyer, M.S.W. (Illinois, 1977); Jane Clark Moorman, M.S.W. (Tulane, 1971); Stella E. Waugh, M.S.W. (North Carolina at Chapel Hill, 1986).

Clinical Associates: Bess Autry, M.S.W. (North Carolina at Chapel Hill, 1976); Mary Jane Burns, M.S.W. (North Carolina at Chapel Hill, 1974); Barbara Denny, M.S.W. (North Carolina at Chapel Hill, 1975); Muki Fairchild, M.S.W. (North Carolina at Chapel Hill, 1976); Elinor Roy, M.S.W. (North Carolina at Chapel Hill, 1977); Margaret Wilner, M.S.W. (Columbia, 1977).

Clinical Assistant Professor: Bernard Ferencik, M.S.W., Ph.D. (Ohio, 1981).

Consulting Associates: Mary A. Black, M.S.W. (North Carolina at Chapel Hill, 1970); Renate P. Guttman, M.S.W. (North Carolina at Chapel Hill, 1969); Mary Gail Holton, A.C.S.W. (Richmond Professional Inst., 1966); Betty B. Parham, M.S.W. (Smith, 1971); Anne K. Parrish, M.S.W. (North Carolina at Chapel Hill, 1963); Joye S. Pursell, M.S.W. (North Carolina at Chapel Hill, 1978); Carolyn Thornton, M.S.W. (North Carolina at Chapel Hill, 1968).

Instructors: Camille S. Arrington, M.S.W. (North Carolina at Chapel Hill, 1982); Christine Bell, M.S.W. (North Carolina at Chapel Hill, 1977); Edna Bullard, M.S.W. (North Carolina at Chapel Hill, 1980); Linda L. Campbell, A.C.S.W. (North Carolina at Chapel Hill, 1981); Betye B. Carey, A.C.S.W. (North Carolina at Chapel Hill, 1982); Teresa S. Everett, M.S.W. (North Carolina at Chapel Hill, 1986); Barbara A. Gau, M.S.W. (North Carolina at Chapel Hill, 1986); Eugene B. Glenn, Jr., M.S.W. (North Carolina at Chapel Hill, 1981); Debbie Hill, M.S.W. (North Carolina at Chapel Hill, 1987); Nyra Hill, M.S.W. (North Carolina at Chapel Hill, 1978); Robert Laws, M.S.W. (North Carolina at Chapel Hill, 1978); Mary Pat Lennon, M.S.W. (Catholic Univ., 1978); Edward Lueth, M.S.W. (North Carolina at Chapel Hill, 1982); Lois Perlman Minis, M.S.W. (North Carolina at Chapel Hill, 1981); Ylana N. Miller, Ph.D. (California at Berkeley, 1975); Caryl A. Polk, M.S.W. (North Carolina at Chapel Hill, 1983); Mickey Tullar, M.S.W. (North Carolina at Chapel Hill, 1982); Terri Woodford, M.S.W. (Virginia Commonwealth, 1983).

DIVISION OF SOCIAL AND COMMUNITY PSYCHIATRY

Assistant Professor: Marvin S. Swartz, M.D. (Tufts, 1980), *Head of Division*.

Professors: Kurt Back, Ph.D. (Massachusetts Inst. of Tech., 1949); Daniel G. Blazer, M.D. (Tennessee, 1969), Ph.D. (North Carolina at Chapel Hill, 1980); James H. Carter, M.D. (Howard, 1966); Linda K. George, Ph.D. (Duke, 1975); George L. Maddox, Ph.D. (Michigan, 1956); Erdman B. Palmore, Ph.D. (Columbia, 1959).

Associate Professor: Jacquelyne J. Jackson, Ph.D. (Ohio State, 1960).

Associate Consulting Professor: Nicholas Stratas, M.D. (Toronto, 1957).

Assistant Professors: John C. S. Breitner, M.D., M.P.H. (Pennsylvania, 1970); David Larson, M.D. (Temple, 1973); Keith G. Meador, M.D. (Louisville, 1982); Kenneth Rockwell, M.D. (Duke, 1961).

Assistant Consulting Professor: James O. Hoover, M.D. (Iowa, 1966).

Assistant Medical Research Professor: Lawrence Landerman, Ph.D. (Duke, 1978).

Associate: Thomas E. Sibert, M.D. (Baylor, 1983).

Clinical Associates: James N. Finch, M.D. (South Florida, 1981); Mary Lou Melville, M.D. (Texas, 1971).

Consulting Associates: Lesley Braasch, M.D. (New York, 1970); Jeffrey Brantley, M.D. (North Carolina at Chapel Hill, 1977); Eugene A. Douglas, M.D. (North Carolina at Chapel Hill, 1959); Stephen B. Fleishman, M.D. (Maryland, 1974); Mark D. Glenn, M.D. (North Carolina at Chapel Hill, 1979); Sally Johnson, M.D. (Jefferson, 1976); Gordon Lavin, M.D. (Case Western Reserve, 1978).

Instructors: Peter H. Holden, M.D. (Univ. of Sheffield, 1948); James A. Smith III, M.D. (Howard, 1976).

Research Associates: James R. Bachar, Ph.D. (Pittsburgh, 1969); Dana C. Hughes, Ph.D. (Kansas State, 1979); Sharon M. Wallsten, B.S.N., M.P.H. (Michigan, 1965).

Medical Research Associate: Connie Service, M.P.H. (North Carolina at Chapel Hill, 1979).

Associate in Research: Nancy E. Fowler, M.Ed. (North Carolina at Chapel Hill, 1971).

Emeriti: Marie Baldwin, M.D.; Marianne Breslin, M.D.; Ewald W. Busse, M.D.; Bingham Dai, Ph.D.; John A. Fowler, M.D.; Ila H. Gehman, Ed.D.; Robert L. Green, M.D.; Dorothy K. Heyman, M.S.W.; Mary M. Huse, Ph.D.; Maurine B. LaBarre, M.S.W.; Charles E. Llewellyn, M.D.; Joseph B. Parker, M.D.; Adriaan Verwoerd, M.D.; Martha L. Wertz, M.S.W.; William P. Wilson, M.D.

Required Courses

PSC-200. Consists of sixty hours devoted to human behavioral sciences basic to medicine: behavioral neurobiology, individual psychology, and the social sciences. The class is divided into small groups of ten to twelve students, each group led by two senior faculty members, with contrasting knowledge, and a psychiatric resident. Group activity consists of discussion of assigned readings in all of the areas listed above as well as interviews of psychiatric and nonpsychiatric patients intended to demonstrate behavioral science principles as well as provide opportunity for development of interviewing skills.

PSC-205. Required during the second year is an eight-week clerkship in clinical psychiatry. The student assumes limited responsibility, under supervision, for diagnosis and treatment of patients on the psychiatric wards, psychiatric outpatient clinic, and psychosomatic consultation services on nonpsychiatric wards of the hospital. Supervision is directed toward the application of concepts of diagnosis, psychopathological formulation, and therapy. These concepts are taken from descriptive, biological, psychoanalytic, and psychosocial contributions to current psychiatric thought. Supervision is also provided to develop interpersonal techniques of sensitive observation and therapeutic use of self. Emphasis is placed upon concepts and techniques applicable to all patients as well as psychiatric patients. Didactic instruction includes seminars on symptomatic, characterological, and psychophysiological neurotic conditions; the major psychoses; psychiatric problems of childhood; adolescence and late life; drug and somatic therapies; the psychotherapies; and introductory electroencephalography. In addition to rounds and case conferences, students are encouraged to observe psychotherapy and to participate in supervised psychological treatment whenever appropriate situations can be provided.

Electives

PSC-210(B). Philosophy of Science and Behavioral Sciences. A reading-discussion seminar reviewing the traditional (logical empiricist) view of scientific knowledge and method followed by consideration of recent developments of thought suggesting additions and modifications to that view. Implications for the behavioral sciences in medicine are emphasized. Weight: 1. *Hine*

PSC-213(B). Human Development I: Birth to Adolescence. This course is a survey of the psychological development of the child from birth through adolescence. The first segment of the course is designed to provide the student with an awareness of some of the major theoretical orientations to child development including the psychoanalytic, Piagetian, and social learning positions. This is followed by a systematic study of the normal sequences of child development, focusing in particular on some of the major events in the cognitive, social, and emotional life of the child. The course is run in seminar fashion

utilizing numerous theoretical and research papers as well as observation of children in naturalistic settings to facilitate class discussion. Students will also be required to familiarize themselves with research in child development by doing a review of the literature in a defined area. Weight: 2. *Curry*

PSC-214(B). Human Development II: The Later Years of Life. This course will cover the basic research material in the psychology of adult development and aging with an emphasis on such topics as personality development, intellectual development, learning and memory, family and social processes, health and behavior, and research methods. Additionally, the use of research and knowledge base in geriatric medicine and in geriatric psychiatry, with a focus on understanding normal development in mid-life and old age, will be discussed. The course will be taught as a seminar. There will be assigned readings on reserve at the library and a recommended text. Students will be required to review the literature in an area of their choice, prepare an annotated bibliography, and have an oral examination on the topic. Weight: 2. *Siegler*

PSC-215(B). Comparative Personality Theory. An examination of models of human functioning; topics will include examples from psychoanalytic, interpersonal, humanistic, behavioristic, and existential approaches with the goal of recognizing personality issues that may arise within the framework of the doctor-patient relationship. A paper covering empirical approaches is required. Weight: 1. *Crovitz*

PSC-217(B). Interpersonal Relationships. Theoretical and empirical models of interpersonal relationships will be examined, with emphasis upon the changing, developmental stages of interpersonal relationships. Research in marital and family systems and in physician-patient dyads will be critically discussed. Weight: 1. *Lochman*

PSC-220(B). Sleep Disorders. Students will initially be given a reading list and introduced to the ambulatory sleep laboratory and its operations. Thereafter they will meet with the staff on four-day-a-week schedule to learn how sleep is scored in the laboratory and on a semi-weekly basis to discuss their reading. After about two weeks they will begin to formulate a research project to be carried out in the lab in conjunction with the staff. A written review of the reading and how it frames the hypotheses to be tested will be generated by the student. From this point on further research readings will be assigned (or found by the student) to flesh out the background for the research as the project moves forward. The project will be expected to be of the quality to be formed into a manuscript and offered for publication. Data will be analyzed with the student participating fully with the staff in the statistical design and analysis. Weekly lab seminars will be used to discuss ongoing research in the lab. The student and his project will be a part of this ongoing seminar. Weight: 3. *Marsh, Erwin, Hoelscher, and Webb*

PSC-223(B). Neurobiological Basis of Behavior. The course surveys neuroanatomical, neurophysiological, neurochemical, and neuropharmacological evidence of central nervous system function as it relates to normal and abnormal behavior. Clinical description, measurement of function, as well as the biological substrates of affective disorders and psychoses, will be emphasized. Scientific bases of current therapeutic procedures, especially psychopharmacological, will be examined. Course format consists of assigned readings, study questions, lectures by faculty, and other active researchers. Mid-term and final examinations are given. Each student is expected to critique a circumscribed area of research. Additionally, students will have an opportunity to become acquainted with and to participate in ongoing research. Weight: 4. *Ellinwood, Bissette, Cant, Carroll, Coffey, Davidson, Erwin, Hong, Kilts, Krishnan, Kuhn, Lin, Logue, Marsh, Nemeroff, Nishita, Slotkin, Weiss, and Williams*

PSC-238(B). Psychophysiology. The first half of the course is devoted to lecture presentations covering the major topics in psychophysiology. The topics receiving a major emphasis are cognition, attention, emotional states, EEG, evoked potentials, skin poten-

tial, heart rate, and muscle tension. The second half of the course is devoted to seminar style presentations by the students on topics of their choice and to demonstrations and experiments carried out in the laboratory. A midterm and final exam along with a term paper determine the grade. Weight: 3. *Marsh*

PSC-293(B). Behavioral Medicine. The theory and application of behavior therapy and behavior modification as applied to the treatment of disease will be discussed. The course will focus on the direct behavioral manipulation of pathophysiology, using bio-feedback, relaxation and other self-control techniques. Attention will be focused on the treatment of headaches, cardiovascular disorders, neuromuscular disorders, chronic pain, and stress-related gastrointestinal disease. Students will be expected to spend at least three hours per week seeing patients and rounding with staff. Participation by arrangement with instructor. Weight: 2. *Surwit, Keefe, and Blumenthal*

PSC-297(B). Ethnic and Minority Health Patterns and Problems. Descriptive and analytical focus on the literature about ethnic and minority health patterns in the United States, the issues inherent therein, and the implications thereof for the delivery of medical services. Weight 4. *Jackson*

PSC-299(B). Preceptorship in Neurobiology and/or Behavioral Science. Opportunity for the student to work closely with a member of the faculty in an area of mutual interest, with emphasis upon research. (See biobehavioral study program for partial list of interest areas; more complete descriptions available.) Weight: 1-18. *Ellinwood and staff*

PSC-303(B). Developmental Disabilities. The course will focus on several disorders illustrative of the field, such as retardation, autism and learning disabilities as well as broader issues relating to evolving approaches at diagnosis, remediation, and prevention. The objectives are to present what is known about the etiology and course of developmental disabilities as well as an appreciation of management issues. Weight: 2. *Thompson*

PSC-305(B). Social and Cultural Aspects of Illness. Seminar on medical-social roles in community and hospital. Topics include physician-patient relationship; epidemiology of illness and health services in terms of ecology, social stratification, race, deviance, and life cycle. Proposals for improving health services are examined. Students prepare and present to the seminar a term paper on a topic of their choice. Students wishing further work in one particular topic such as black sub-culture or gerontology, should take PSC-299(B) specifying particular interest. May be taken in conjunction with PSC-251(C). Weight: 3. *Palmore and Maddox*

PSC-227(C). Behavioral Aspects of Pediatrics. This course will offer students the opportunity to study, as a part of an interdisciplinary team, in the diagnosis and treatment of children and adolescents (ages two to twenty-one) with a variety of psychiatric problems. This may include anorexia nervosa, bulimia, enuresis, encopresis, school phobia, psychosomatic disorders, tourette syndrome, suicidal and acting-out adolescents, chronically or terminally ill children and child abuse and neglect cases. Trainees will study principles of psychological development, psychoanalytic and family systems theory. The student will participate in child, parent, and family interviews as an integral part of the treatment team. There will be an opportunity to be involved in the inpatient and outpatient treatment process on pediatric and adolescent psychiatric wards. (See also PED-227(C).) Weight: 2-6. *D. Jones, Lee, Yancy, and Mrs. Pratt*

PSC-230(C). Combined Medical Specialties Unit Clerkship (CMSU). This eight week clerkship on the CMSU is designed to improve students' understanding of clinical problems in psychosomatic medicine. Students will admit patients with house staff and manage them through their hospitalization. Several lectures and conferences complement the clinical work. Course Goals: (1) Primary—to expand the student's knowledge of an experience with the understanding of clinical problems in psychosomatic

medicine. (2) Secondary—to improve diagnostic and therapeutic interviewing skills. In addition it is expected that the student will develop a more effective use of the multidisciplinary (medicine, psychiatry, psychology) therapeutic interventions available in the CMSU setting. How Goals Will be Achieved: Students will work with the CMSU ward team admitting patients on rotation every third night. The student will follow these patients throughout their hospitalization in close cooperation with the house staff. Responsibilities will include initial evaluation and orders (countersigned by house staff) as well as development of diagnostic and therapeutic plans in coordination with attending and house staff. Regular didactic lectures on topics related to diagnosis and management of patients with psychosomatic problems will be given by attending staff. In addition, four conferences per week will be devoted to interviewing patients and the development of formulations and therapeutic plans. During this eight week rotation, the student will be encouraged to become involved in depth with one or more of the therapeutic modalities frequently utilized on the CMSU. Methods of Evaluation: The preceptor and the house staff will observe and evaluate the student's performance working with patients. Weight: 8. *Neelon, Finestone, Brooks, and Williams*

PSC-234(C). Clinical Psychopharmacology. Experiences at John Umstead Hospital in clinical/research in one or more areas of psychopharmacology including clinical use of drugs, human experimental psychopharmacology, evaluation of drugs based on FDA guidelines, biometric approach to ratings of psychopathology, statistical models, use of computers in psychiatry and psychometric testing (mornings only). Weight: 4. *Wilson*

PSC-240(C). Inpatient Psychiatry. This course is an intensive clinical experience in the diagnosis and treatment of severe and incapacitating psychiatric disorders. The student will be given more clinical responsibility than the comparable second year inpatient rotation. Patient care responsibilities will include management of ward milieu. Treatment approaches emphasizing psychotropic medication, individual, family and group psychotherapy will be part of the clinical experience. Participation at selected patient care conferences and didactic lectures is expected. The rotation is available at Duke and the Veterans Administration Medical Center. The rotation at the Veterans Administration Medical Center will include admission decision-making. At Duke, specialty program experience is available. This experience can be structured to include a survey of the variety of residential treatment available in this area. If desired a student may arrange for a special reading tutorial in related topics (e.g. schizophrenia). Weight: 8-6-3. *Cave-nar and Swartz*

PSC-241(C). Clinical Management of Psychiatric Inpatients. Students will develop their skills and knowledge in caring for hospitalized psychiatric patients by performing a subinternship role with close faculty supervision. They will learn treatment of major psychiatric illness by taking primary responsibility for approximately eight patients per month. Weight: 4 or 9. *Poe*

PSC-243(C). Principles and Practice of Outpatient Psychiatry. Training and experience in recognizing and treating emotional disorders in outpatients. Supervised experience with patients having emotional problems commonly seen in medical practice. Training to include theory and techniques of brief psychotherapy, crisis intervention, supportive psychotherapy, and utilization of community resources, both at Duke Hospital and neighboring agencies. The student will be given more clinical responsibility than the comparable second-year outpatient rotation. Because of the nature of outpatient work it is suggested that the student take the longer (eight weeks) rather than the shorter rotation. Weight: 3-8. *Davidson, Hawkins, Werman, and staff*

PSC-245(C). Psychosomatic Medicine. The consultation-liaison services at the Duke Medical Center and the VA Medical Center offer clinical clerkships in the psychological management of medical patients. At Duke Hospital, the student does consultations to

the various medical and surgical services under the supervision of residents and staff. Emphasis is placed on training the student in interviewing, assessing, and intervention with patients who are depressed, hypochondriacal, responding emotionally to illness, or have conversion symptoms. At the VA Medical Center opportunities are available to work with selected staff people on the emotional aspects of the disease process through surgical and medical liaison consultations. Students can select specific areas of interest which include emotional aspects of cardiac disease, intensive care, death and dying, orthopaedics, and pain. Weight: 4 or 8. *Volow and Varia*

PSC-251(C). Community Psychiatry. The student will develop a course based on selections from a variety of community and special population settings; this includes the Durham Mental Health Center and its component units (children's services, alcohol and drug abuse and dependency treatment programs, programs for the care and training of the mentally retarded and adult psychiatry services); the Federal Corrections Center at Butner, and the psychiatric service at the Lincoln Community Health Center. Students interested in this elective must contact Dr. Llewellyn or Dr. James Carter at least four weeks prior to the term selected for this course in order to develop a program tailored to the student's interests. Weight: 4-8. *Swartz, Carter, and staff of Division of Social and Community Psychiatry*

PSC-253(C). Group Psychotherapy. Observation of an on-going outpatient group psychotherapy program. Prerequisites: Student must contact Dr. Hawkins' office at least six to eight weeks prior to course so that a group for observation may be found. Weight: 1. *Hawkins and staff*

PSC-255(C). Marriage Counseling in Medical Practice. The student will develop knowledge in the basic theoretical and clinical concepts of the marital relationship and learn to recognize, evaluate, and treat patients who present with marital problems. The orientation will be for the physician delivering primary care, and an emphasis will be placed on the relationship between marital dynamics and compliance with the treatment regimens and the course of different illnesses. Didactic and case material will be presented in seminar format, and students will be expected to present case material for discussion. Weight: 1. *Turnbull*

PSC-260(C). Neuropsychiatry. Neuropsychiatry is the study of how alterations in brain structure and function produce disturbances in human behavior. In this two to four credit course, the student will become familiar with the major neuropsychiatric syndromes: dementia, delirium, organic personality syndromes of temporal and frontal lobe disease, etc. and will develop an understanding of their diagnosis and treatment based upon a multidisciplinary clinical approach. The patient population will be drawn from the Duke University Medical Center and Durham Veterans Administration Medical Center psychiatry, neurology, and neurosurgery services. The student will also be provided the opportunity to learn about the laboratory evaluation of such patients, including formal neuropsychological testing and advanced brain imaging technology (e.g., MRI, computerized EEG, regional cerebral blood flow, and PET). Weight: 2 to 4. *Volow and Logue*

PSC-261(C). Clinical Psychology. The goal of this course is to help the student determine the relevance of psychological factors in the etiology and management of common medical problems. The course will introduce the student to psychological assessment techniques. Students will gain familiarity with the potential utility of these tests in medical practice by both observation and practice in their administration and interpretation. Students who are interested in medical problems such as cognitive impairment, low back pain, headache, or cardiac disease may elect to concentrate their efforts in a specific area. Weight: 1. *E. Crovitz*

PSC-263(C). Treatment of Anorexia Nervosa and Bulimia. The purpose of this course is to train students in recognizing and treating anorexia nervosa and bulimia. The ex-

perience is offered in a multimodel treatment setting and includes: participation in inpatient team meetings, individual psychotherapy sessions with inpatients, observation of family sessions, and participation in outpatient support groups. Weight: 4-8. *Rockwell and Ellinwood*

PSC-264(C). Continuum of Care in Child Psychiatry. (Emphasis on inpatient care.) The course consists of a supervised opportunity on Halsted and at the child guidance clinic to provide clinical care for children with a variety of behavioral, emotional, and developmental disorders. Collaboration with milieu team members in a multidisciplinary setting is emphasized. Participation in diagnostic and treatment conferences is an integral part of the experience. Weight: 4 or 8. *O'Quinn*

PSC-265(C). Inpatient Adolescent and Family Psychiatry. Adolescent and family psychopathology are emphasized in the full-time clinical rotation at the Children's Psychiatric Institute, John Umstead Hospital, Butner, NC. The experience offered is an intensive and rich one with opportunities to observe and treat patients and their families. Group and individual supervision, collaboration with milieu team members and diagnostic and treatment conferences are heavily emphasized. Prerequisites: Personal application and interview by instructors. Career interest in psychiatry. Weight: 8. *Guajardo*

PSC-266(C). Clinical Management of Adolescent Inpatients. This course consists of well supervised, clinical care for adolescents with various psychopathologic disorders. Each student will be an integral member of the clinical team, with opportunities for participating in individual and group psychotherapy as well as family therapy and parent counseling. A senior staff psychiatrist will be assigned as a preceptor. Weight: 4-8. *Anderson and Curry*

PSC-267(C). Clinical Child Psychiatry Outpatient Programs. Under supervision, the student will perform diagnostic evaluations and short-term treatment with parents, children, and families, and may participate in one or more of the following specialty programs: (a) therapeutic kindergarten and elementary school; (b) juvenile court clinic; (c) conduct disorder clinic. Child development and the psychobiological and psychodynamic perspectives of childhood psychopathology will be emphasized. Weight: 3-6. *Harris, Keith, Lochman, and Flowers*

PSC-275(C). Assessment of Sleep Disorders and Treatment. The student will participate in our weekly sleep clinic which assesses three to four patients with sleep problems every Monday morning. This is followed by a conference which allows the staff and the students to discuss the cases seen that morning. This conference is also used to discuss general problems in sleep disorders, quality control of our sleep evaluations and recent research findings of relevance to the laboratory. The students will also come to the laboratory one morning per week to participate in the scoring of overnight polysomnographic recordings of patients receiving evaluation. They will be expected to learn the scoring system and perform some evaluations with staff supervision. There are numerous records in our laboratory upon which they may also practice to sharpen their skill. They will be free to participate in the several research questions being pursued in the laboratory by the staff. An introduction to the lab will provide the student an overview of equipment, lab operations, and the ongoing research questions. A reading list will also be provided to allow the student to acquire background on the cases seen in the laboratory. Weight: 3. *Erwin Marsh, Hoelscher, and Webb*

PSC-280(C). Modern Psychotherapy I: Intensive Clinical Introduction. In this fulltime (or near fulltime) introduction the student participates actively in assessment of outpatients for psychotherapy, short-term psychotherapy of inpatients, ongoing psychotherapy groups and family therapy sessions. In addition he/she attends seminars on the various psychotherapeutic approaches: psychoanalytically oriented, cognitive, behavioral, existential, transactional, interpersonal, systemic, etc. Readings will be as-

signed and discussed. The student may pursue an area of special interest in greater depth with a selected preceptor. Weight: 4. *Kudler, E. Thompson, Gianturco, Hawkins, Hawthorne, Hine, Melges, Werman and staff*

PSC-281(C). Modern Psychotherapy II: Extended Psychotherapy Experience. The student will: (1) undertake the individual psychotherapy of a patient, with weekly supervisory review by a faculty member of the therapy sessions; or, (2) participate as co-therapist with a member of the faculty in the sessions of a therapeutic group or a family therapy, with followup discussion of each session. This course may be elected for the twelve weeks of the fall term following modern psychotherapy, for twenty weeks (to the middle of the spring term), or, optimally, for the entire remainder of the fourth year. Two to four hours per week will be required. Some additional reading will be included. Prerequisite: modern psychotherapy. Weight: 1 per 12 weeks. *Kudler, E. Thompson, Gianturco, Hawkins, Hawthorne, Hine, Melges, Werman, and staff*

PSC-333(C). Family Psychiatry and the Therapeutic Community: Durham County General Hospital. Students will evaluate and treat patients within a family-oriented therapeutic community. The principles and practice of psychiatric diagnosis and treatment in a community setting will be stressed. Advanced students will participate in family therapy, group therapy, and the total management of the patient. Weight: 8. *Thompson and Winton*

PSC-335(C). Research Preceptorship in Clinical Psychiatry. This course allows the student to work on a research project in clinical psychiatry with selected members of the psychiatric staff. Weight: 3-8. *Gianturco. Clinical staff by arrangement*

PSC-336(C). Biology of Depression. This elective will focus on the diagnostic, nosologic, treatment, and research aspects of depression in adult and late life. The student will be delegated clinical responsibility, and he/she will be closely involved with the treatment team of the affective disorders specialty clinic. Participation at team meetings and diagnostic conferences is expected. Weight: 4-8. *Carroll, Nemeroff, Krishman, and Blazer*

PSC-337(C). Geriatric Psychiatry. The medical and clinical aspects of geriatric psychiatry with emphasis on diagnosis and management of geriatric patients in a variety of treatment facilities. Course includes attendance at scheduled conferences and supervised review of geriatric literature. Course may be taken in conjunction with PSC-214(B). Weight: 3-8. *Breitner, Blazer, Whanger, Wang, and staff*

PSC-343(C). Clinical Aspects of Alcohol and Drug Abuse. This course offers a part-time or full-time experience at the Duke Alcoholism and Addiction Program in the diagnosis and treatment for patients who abuse alcohol and/or drugs. The interrelations of substance abuse with personality disorder and major psychiatric disorder is emphasized. Weight: 4-8. *Mathew and clinical staff*

PSC-353(C). Correctional-Forensic Psychiatry—Adult and Adolescent. Part-time or full-time experience in a correctional setting is offered. Diagnosis and treatment of adult and adolescent offenders with a variety of medical illnesses and behavioral disturbances are recognized. Elements of forensic psychiatry are stressed where appropriate. Supervision is provided by Duke faculty and the Central Prison Hospital and mental health staff. Opportunities for participation in a wide range of original and continuing research are available. Weight: 2-9. *Carter (Duke), Smith (Central Prison), and Rollins (Dorothea Dix)*

PSC-355(C). Clinical Experience in Psychotherapy. This course provides supervised instruction in the long-term care of patients with emotional illness. The student will undertake the psychotherapy of a patient under the direction of a member of the psychiatric faculty. The arrangement with the psychiatric supervisor should be discussed and confirmed with the fourth year clinical departmental professional adviser in psychiatry. Weight: 1-3. *Gianturco and staff*

PSC-357(C). Behavioral Medicine: Behavioral Treatment of Disease. This course is designed to acquaint the student with behavioral treatment approaches which have proved useful in management of many medical problems. Students will be involved in evaluation and treatment of patients with physical and psychiatric disorders. Students will be taught how to conduct a behavioral assessment of medical problems and will be familiarized with various treatment strategies, including relaxation techniques, biofeedback techniques, and operant conditioning and contingency management procedures. Prerequisite: permission of instructor. Weight: 1. *Surwit, Keefe, and Blumenthal*

PSC-400(C). Geriatric Medicine. This elective is offered by the interdepartmental faculty of the Division of Geriatric Medicine. The student will work with faculty, fellows, and house staff in a number of settings involved in the care of the geriatric patient. These will include the Geriatric Evaluation and Treatment Clinic (Duke), Geriatric Evaluation Unit and Clinic (Veterans Administration Medical Center), geriatric consultation services (Veterans Administration Medical Center, Durham County General Hospital, and Duke), nursing home facilities, interactions with community services (Coordinating Council for Senior Citizens), home assessment, and others. Principles to be stressed will be biology and pathophysiology of aging; multiple clinical problems in the elderly; interdisciplinary team approach to evaluation, planning, and treatment; goals of maximal functional achievement and independence for the elderly. The student will participate actively in the workup and management of patients in both inpatient and outpatient settings as well as become more familiar with the problems of the elderly in the community. Familiarity with the growing literature in geriatric medicine will be encouraged and the student will participate in seminars, lectures, and team meetings at the appropriate sites including the Duke Center for the Study of Aging. Prerequisite: approval of instructor must be obtained. Weight: 4 or 8. *Cohen, Meador, Breitner, and gerontology staff*

Radiology

Professor: N. Reed Dunnick, M.D. (Cornell, 1969), *Chairman*.

DIVISION OF IMAGING

Professor: Carl E. Ravin, M.D. (Cornell, 1968), *Director*.

Professors: James T. T. Chen, M.D. (Natl. Defense Med. Ctr., Taiwan, 1950); R. Edward Coleman, M.D. (Washington Univ., 1968); Eric L. Effmann, M.D. (Indiana, 1967); Herman Grossman, M.D. (Columbia, 1953); E. Ralph Heinz, M.D. (Pennsylvania, 1955); Saadoon Kadir, M.D. (University of Freiburg, West Germany, 1970); James B. Duke Professor Charles E. Putman, M.D. (Texas at Galveston, 1967); Reed P. Rice, M.D. (Indiana, 1955); H. Dirk Sostman, M.D. (Yale, 1976); Leonard D. Spicer, Ph.D. (Yale, 1968).

Associate Professors: James D. Bowie, M.D. (Oklahoma, 1967); William H. Briner, B.S. (Temple, 1954); Barbara Carroll, M.D. (Stanford, 1972); William Currie, Ph.D. (North Carolina at Chapel Hill, 1964); C. Craig Harris, M.S. (Tennessee, 1951); Robert Herfkens, M.D. (Loyola, 1974); Ronald Jaszczak, Ph.D. (Florida, 1968); G. Allen Johnson, M.D. (Duke, 1974); Salutario Martinez, M.D. (Havana Univ., 1961); Stephen Riederer, Ph.D. (Wisconsin, 1979); Robert H. Wilkinson, Jr., M.D. (Washington Univ. 1958); Michael R. Zalutsky, Ph.D. (Washington Univ., 1974).

Assistant Professors: Mark E. Baker, M.D. (Loyola, 1978); Russell A. Blinder, M.D. (Pennsylvania, 1979); Erol M. Beytas, M.D. (Vanderbilt, 1981); Caroline Chiles, M.D. (Duke, 1979); Craig Coblentz, M.D. (Univ. of Waterloo, Canada, 1980); Richard H. Cohen, M.D. (New York Univ., 1979); Cirelda Cooper, M.D. (Northwestern, 1980); John Curnes, M.D. (Tulane, 1978); William T. Djang, M.D. (Johns Hopkins, 1977); Carey Floyd, Jr., Ph.D. (Duke, 1981); William Foster, Jr., M.D. (Duke, 1973); Laurence Hedlund, Ph.D. (Pittsburgh, 1968); Barbara Hertzberg, M.D. (Duke, 1980); Glenn E. Newman, M.D. (Duke, 1973); William Meisler, M.D. (Columbia, 1978); Louis M. Perlmutter, M.D. (North Carolina at Chapel Hill, 1977); Claire Poyet, M.D. (Duke, 1981); LeRoy Roberts, Jr., M.D. (Temple, 1975); Steven Rose, M.D. (Washington at Seattle, 1976); Charles Spritzer, M.D. (Pittsburgh, 1981); Daniel C. Sullivan, M.D. (Vermont, 1970); Robert Vandemark, M.D. (Upstate Med. Center, 1980); James Vogler III, M.D. (Bowman Gray, 1977); Andrew Yeates, M.D. (Northwestern, 1977).

Associates: Orest Boyko, M.D. (Indiana, 1982); Steven Genkins, M.D. (Columbia, 1980); Michael Han-son, M.D. (West Virginia, 1974); Linda Gray Leithe, M.D. (Ohio State, 1982); David Lombardo, M.D. (Virginia, 1981); Daniel Miner, M.D. (John Hopkins, 1981); Steven Nokes, M.D. (Tennessee, 1983); Robert Posteraro, M.D. (Yale, 1973); Matthew Ralston, M.D. (Duke, 1981); Mohsin Saeed, M.D. (Connecticut, 1979); Hal Safrit, M.D. (North Carolina at Chapel Hill, 1982); Amir Salomon, M.D. (McGill Univ., Montreal, 1981); J. Robert Yankes, M.D. (Pittsburgh, 1982).

Research Associates: Colleen Bergin, M.D. (Auckland Univ., 1979); James Dobbins III, Ph.D. (Wisconsin, 1985); Dean Keuthe, Ph.D. (Duke, 1986); James Lee, Ph.D. (Duke, 1986); Hirotsugu Munechika, M.D. (Showa University School of Medicine, Japan, 1964); Acharan Narula, Ph.D. (Univ. of Rajasthan, India, 1971); John Need, Ph.D. (California at Berkeley, 1954); Siya Ram, Ph.D. (Cent Drug Res. Inst., Lucknow, 1979); Anthony Ribeiro, Ph.D. (California at San Diego, 1975).

DIVISION OF RADIATION ONCOLOGY

Professor: Leonard Prosnitz, M.D. (State Univ. of New York, 1961), *Director*.

Professor: Gustavo S. Montana, M.D. (Bogota, Columbia, 1960); Fearghus O'Foghludha, Ph.D. (Natl. Univ. of Ireland, 1961).

Associate Professors: Randy Jirtle, Ph.D. (Wisconsin, 1975); James Oleson, M.D. (Arizona, 1976).

Assistant Professors: Mitchell Anscher, M.D. (Virginia, 1981); David Brizel, M.D. (Northwestern, 1983); Mark Dewhirst, Ph.D., D.V.M. (Colorado, 1979); Mark J. Engler Ph.D. (Mass. Inst. of Tech., 1969); Edward Halperin, M.D. (Yale, 1979); Kenneth Leopold, M.D. (Pennsylvania, 1982); Thaddeus Samulski, Ph.D. (New York at Buffalo, 1975); Stephen Strom, Ph.D. (Kansas, 1978).

Associate: Conrad Knight.

Research Associates: James Blackburn, Gerard Honore, Ph.D. (Duke, 1986); Sharon Meyer, Ph.D. (Cornell, 1984); David Monteith, Ph.D. (Texas at Houston, 1986).

Emeriti: George J. Baylin, M.D.; Alice L. McCrae, M.D.

Required Course

RAD-200. The basic course in radiology for all medical students is combined with physical diagnosis and laboratory diagnosis into IND-200. The course is a concentrated lecture series with correlating demonstration laboratories designed to provide a broad introductory exposure to the entire field of diagnostic radiology.

Electives

RAD-221(B). General Physics of Radiology. Basic physics underlying radiation diagnosis and therapy, emphasizing production and measurement of ionizing radiation and radiation interactions in tissue; physical rationale of radiation methods in clinical practice; survey of recent developments in radiological equipment; radiation hazards. Weight: 2. *O'Foghludha*

RAD-223(B). Radioisotope Methods and Techniques in Biomedical Research. Weight: 2. *O'Foghludha, Currie, and Knight*

RAD-227(B). General Radiobiology. Basic fundamentals essential to an understanding of biological effects of ionizing radiation at the molecular, cellular and organismal level. The course will cover the following topics: radiation physics, radiation chemistry, DNA repair, genetic effects, radiation carcinogenesis, radiation effects on the developing embryo and fetus, general radiation syndromes, oxygen effect, radiation protectors and sensitizers, tumor physiology and hyperthermia. Weight: 2. *Jirtle*

RAD-231(B). Introduction to Radiological Sciences. Basic principles underlying radiography, contrast materials, ultrasound, nuclear medicine, computerized tomography, and nuclear magnetic resonance will be presented. A thorough review of radiographic anatomy will precede an organ-system approach to radiologic-pathologic correlation. Lectures will be supplemented with demonstrations. Weight: 3. *Effmann and Blinder*

RAD-235(B). Magnetic Resonance and Fluid Mechanics. Magnetic Resonance and Fluid Mechanics is a graduate level seminar about how flowing liquids are imaged with nuclear magnetic resonance (NMR). Topics include basic fluid mechanics, basic theory of NMR imaging, and problems associated with conducting experimental science that combines these two fields. Dr. Kuethe will lead up to nine of the two-hour weekly discussions. For the remaining sessions, other participants will be required to lead discussions on published papers or topics of their choice. Weight: 2. *Kuethe*

RAD-250(B). Research in Radiology. An individually arranged experience in which the student identifies with and participates in an established research program of a faculty member. Program should be arranged with DPA and proposed faculty member well in advance of starting date. Weight: 1-18. *Effmann, Johnson, and Sostman*

RAD-210(C). Pediatric Radiology. A specialized program of instruction and participation in the wide variety of radiographic examinations in the pediatric age group. Special correlation of these examinations to the problems of specific diagnosis and patient care will be made. Students must contact Dr. Effmann prior to registration. Weight: 4-8. *Effmann and staff*

RAD-211(C). Clerkship in Neuroradiology. A specialized program of detailed instruction in neuroradiology. The program includes participation in the performance and interpretation of a variety of examinations including cerebral angiography, pneumoencephalography, computerized axial tomography, nuclear magnetic resonance, myelography, cisternography, and others. Students must contact Dr. Djang prior to registration. Weight: 4-8. *Djang and staff*

RAD-215(C). Clinical Radiation Oncology. Half of all cancer patients require radiation therapy of curative or palliative intent at some point in their care. This course provides clinical experience in evaluation, treatment, and follow-up of patients treated in the Division of Radiation Oncology. The course is particularly directed to students with career goals in medical, radiation, or surgical oncology. Students must contact Dr. Prosnitz prior to registration. Weight: 4-8. *Prosnitz and staff*

RAD-229(C). Basic Radiology Clerkship. This is designed to provide a broad exposure to varied aspects of diagnostic radiology. The elective consists of: (a) an informal lecture course, supplemented by student presentations; (b) weekly rotations observing the performance and discussing the interpretation of radiographic procedures; (c) use of an extensive teaching file of radiographs; (d) viewing a series of audiovisual tapes. One week is spent on the chest rotation. The other rotations are at the individual students' discretion, and may include GI, GU, bone, neuro, pediatrics, vascular, nuclear medicine, body computed tomography or ultrasonography. Rotations to the VAMC radiology department may also be arranged. All registrants will meet with Dr. Cooper the morning of the first day of the course to discuss their individual rotations. Weight: 4-8. *Cooper and staff*

Surgery

James B. Duke Professor: David C. Sabiston, Jr., M.D. (Johns Hopkins, 1947), *Chairman*.

DIVISIONS OF GENERAL AND CARDIOTHORACIC SURGERY

Professors: James B. Duke Professor D. Bernard Amos, M.D. (Guys Hospital, London, 1963), *Experimental Surgery*; William G. Anlyan, M.D. (Yale, 1949); James B. Duke Professor Dani P. Bolognesi, Ph.D. (Duke, 1964), *Experimental Surgery*; Eugene D. Day, Ph.D. (Delaware, 1952), *Experimental Surgery*; Howard C. Filston, M.D. (Western Reserve, 1962); Mary and Deryl Hart Professor of Surgery Robert H. Jones, M.D. (Johns Hopkins, 1965); Joseph A. Moylan, Jr., M.D. (Boston, 1964); H. Newland Oldham, Jr., M.D. (Baylor, 1961); William P. J. Peete, M.D. (Harvard, 1947); Hilliard F. Seigler, M.D. (North Carolina at Chapel Hill, 1960); Delford L. Stickel, M.D. (Duke, 1953); Andrew S. Wechsler, M.D. (State Univ. of New York, 1964); Walter G. Wolfe, M.D. (Temple, 1963); W. Glenn Young, Jr., M.D. (Duke, 1948).

Consulting Professors: Steward M. Scott, M.D. (Baylor, 1951); Gulshan K. Sethi, M.D. (All India, 1963); George Smith, M.D. (Univ. of St. Andrews, 1957), Ch.M. (Univ. of St. Andrews, 1959), D.Sc. (Glasgow, 1964); Timothy Takaro, M.D. (New York Univ., 1943).

Associate Professors: Onyekwere Akwari, M.D. (Southern California, 1970); Darell D. Bigner, M.D. (Duke, 1965), Ph.D. (Duke, 1971), *Experimental Surgery*; Ralph R. Bollinger, M.D. (Tulane, 1970), Ph.D. (Duke, 1977); Gregory S. Georgiade, M.D. (Duke, 1973); John P. Grant, M.D. (Chicago, 1969); George S. Leight, Jr., M.D. (Duke, 1972); James E. Lowe, M.D. (California at Los Angeles, 1973); Philip D. Lumb, M.B.B.S. (London University School of Medicine, 1974); William C. Meyers, M.D. (Columbia, 1975); J. Scott Rankin, M.D. (Tennessee, 1969);

Alfred Sanfilippo, M.D. (Duke, 1975); Ph.D. (Duke, 1976), Experimental Surgery; Robert N. Sladen, M.B., Ch.B. (Univ. of Cape Town Med. Coll., South Africa, 1970); Wirt W. Smith, M.D. (Texas, 1951), Experimental Surgery; John L. Weinerth, M.D. (Harvard, 1967).

Associate Medical Research Professors: Per-Otto F. Hagen, F.H.W.C. (Watt University, Edinburgh, Scotland, 1961), Experimental Surgery; Alphonse J. Langlois, Ph.D. (Duke, 1966), Experimental Surgery.

Adjunct Associate Professor: Jeffrey J. Collins, Ph.D. (Harvard, 1972), Experimental Surgery.

Assistant Professors: Norbertus P. DeBruijn, M.D., M.Sc. (Univ. of Gronigen, 1976); Michael S. Gorback, M.D. (Maryland, 1979); J. Dirk Iglehart, M.D. (Harvard, 1975); Richard L. McCann, M.D. (Cornell, 1974); Lawrence H. Muhlbaier, Ph.D. (North Carolina at Chapel Hill, 1981), Experimental Surgery; Glenn E. Newman, M.D. (Duke, 1973); Theodore N. Pappas, M.D. (Ohio State, 1981); Nicholas A. Shorter, M.D. (Johns Hopkins, 1979); Lloyd R. Smith, Ph.D. (Alabama, 1985); Peter K. Smith, M.D. (Duke, 1977); Ross M. Ungerleider, M.D. (Rush, 1976); Peter Van Trigt III, M.D. (Tulane, 1977); Walter B. Vernon, M.D. (Harvard, 1980); Frances E. Ward, Ph.D. (Brown, 1965), Experimental Surgery.

Assistant Medical Research Professors: Anwar S. Abd-Elfattah, Ph.D. (Mississippi, 1979); Bruce Lobaugh, Ph.D. (Pennsylvania, 1981); Thomas J. Matthews, Ph.D. (Missouri, 1971), Experimental Surgery; Gary Stuhlmiller, Ph.D. (Duke, 1976), Experimental Surgery; Kent J. Weinhold, Ph.D. (Pennsylvania, 1979), Experimental Surgery.

Assistant Clinical Professors: Mohammad Maroof, M.D. (Liaquat Med. Coll., Pakistan, 1964); John W. Michael, M.Ed. (Northwestern, 1982).

Assistant Consulting Professors: Albert H. Bridgman, M.D. (Louisiana, 1956); Rollins S. Burhans, Jr., M.D. (Louisville, 1963); Gordon M. Carver, M.D. (Duke, 1948); Richard L. Dales, M.D. (South Carolina, 1976); John T. Daniel, M.D. (Howard, 1964); Arthur Deutsch, M.D. (Hebrew Univ. and the Haddassa Med. Sch., Israel, 1971); Thomas L. English, M.D. (Duke, 1969); Thomas J. Enright, M.D. (Buffalo, 1948); Peter A. Gentling, M.D. (Northwestern, 1964); Walter J. Loehr, M.D. (Cornell, 1963); F. Maxton Mauney, Jr., M.D. (Duke, 1959); W. B. McCutcheon, Jr., M.D. (Virginia, 1952); Amir A. Neshat, M.D. (Isfahan University, Iran, 1960); Stephen K. Rerych, M.D. (Columbia, 1974); B. Gray Taylor, M.D. (Harvard, 1948); James P. Weaver, M.D. (Pennsylvania, 1969); David K. Wellman, M.D. (Duke, 1971); James S. Wilson, Jr., M.D. (North Carolina at Chapel Hill, 1975).

Medical Research Associate: Paul Hendrix, B.S. (Coll. of Charleston, 1970), B.H.S. (Duke, 1975).

Research Associates: Susan M. Blanchard, Ph.D. (Duke, 1982); Timothy Darrow, Ph.D. (State Univ. of New York, 1980); James W. Davis, M.S.E.E. (Duke, 1974); Gudrun Huper, M.A. (Stuttgart, Germany).

DIVISION OF NEUROSURGERY

Professor: Robert H. Wilkins, M.D. (Pittsburgh, 1959), *Chief*.

Professor: Blaine S. Nashold, M.D. (Louisville, 1949).

Associate Professor: Wesley A. Cook, Jr., M.D. (Oregon, 1963).

Assistant Professors: Allan H. Friedman, M.D. (Illinois, 1974); Richard S. Kramer, M.D. (Duke, 1962); W. Jerry Oakes, M.D. (Duke, 1972); Ziaur Rahman, M.B. (Prince of Wales Med. Coll., India, 1968); Bruno J. Urban, M.D. (Germany, 1960).

Assistant Consulting Professors: Peter R. Bronec, M.D. (Duke, 1981); Bruce L. Kihlstrom, M.D. (North Carolina at Chapel Hill, 1972); Robert E. Price, Jr., M.D. (North Carolina at Chapel Hill, 1964).

Research Associates: Janice O. Levitt, Ph.D. (Temple, 1963); Robert D. Pearlstein, M.S. (North Carolina at Chapel Hill, 1978).

DIVISION OF ORAL SURGERY

Associate Professor: John C. Angelillo, D.D.S., M.D. (Duke, 1970), *Chief*.

Assistant Professor: Edward A. Dolan, D.D.S. (Maryland, 1971).

Assistant Consulting Professors: George A. Walsh, D.D.S. (Georgetown, 1972); Cornelius J. White, D.D.S. (Georgetown, 1951).

DIVISION OF ORTHOPAEDIC SURGERY

Professor: James R. Urbaniak, M.D. (Duke, 1962), *Chief*.

Professors: Frank H. Bassett III, M.D. (Louisville, 1957); Frank W. Clippinger, M.D. (Washington, 1952); James B. Duke Professor J. Leonard Goldner, M.D. (Nebraska, 1943); Donald E. McCollum, M.D. (Bowman Gray, 1953); James H. McElhaney, Ph.D. (West Virginia, 1964), Experimental Surgery.

Associate Professor: John M. Harrelson, M.D. (Duke, 1964).

Associate Consulting Professors: Ralph W. Coonrad, M.D. (Duke, 1947); John Glasson, M.D. (Cornell, 1943).

Assistant Professors: Michael J. Bolesta, M.D. (Missouri, 1981); Robert D. Fitch, M.D. (Duke, 1976); William E. Garrett, M.D., Ph.D. (Duke, 1976); Richard D. Goldner, M.D. (Duke, 1974); William T. Hardaker, M.D. (Duke, 1973); Stephen N. Lang, M.D. (Illinois, 1965); Terry R. Malone, E.D.D. (Duke, 1985); Salutario Martinez, M.D. (Havana Univ., 1961); James A. Nunley II, M.D. (Tulane, 1973); William J. Richardson, M.D. (Eastern Virginia, 1977).

Assistant Consulting Professors: William J. Callison, M.D. (Vanderbilt, 1953); J. Lawrence Frank, M.D. (Duke, 1965); Stephen A. Grubb, M.D. (Northwestern, 1974); J. George Jonas, M.D. (Zurich, 1954); C. Robert Lincoln, M.D. (Med. Coll. of Virginia, 1960); Angus M. McBryde, Jr., M.D. (Duke, 1963); Leslie C. Meyer, M.D. (Nebraska, 1943); William S. Ogden, M.D. (Med. Coll. of Georgia, 1965); Edwin T. Preston, Jr. M.D. (Duke, 1960); Glydon B. Shaver, Jr., M.D. (Tennessee, 1961).

Adjunct Assistant Professor: Marcia M. Goldner, Ph.D. (Duke, 1972).

Consulting Associates: Richard F. Bruch, M.D. (Illinois, 1972); Albert T. Jennette, M.D. (North Carolina at Chapel Hill, 1959); Ronald A. Pruitt, M.D. (Med. Coll. of Virginia, 1959); William A. Somers, M.D. (Duke, 1972).

Research Associate: Anthony V. Seaber.

DIVISION OF OTOLARYNGOLOGY

Professor: William R. Hudson, M.D. (Bowman Gray, 1951), *Chief*.

Associate Professors: T. Boyce Cole, M.D. (North Carolina at Chapel Hill, 1962); Joseph C. Farmer, Jr., M.D. (Duke, 1962); Patrick D. Kenan, M.D. (Duke, 1959).

Associate Medical Research Professor: John H. Casseday, Ph.D. (Indiana, 1970).

Associate Consulting Professor: Carl N. Patterson, M.D. (Maryland, 1944).

Assistant Professors: Samuel R. Fisher, M.D. (Duke, 1975); John T. McElveen, Jr., M.D. (North Carolina at Chapel Hill, 1978).

Assistant Consulting Professors: Beverly J. Adams, M.D. (Duke, 1977); Charles E. Clark III, M.D. (Michigan, 1968); Seth G. Hobart, Jr., M.D. (Virginia, 1950); Lynn A. Hughes, M.D. (Oklahoma, 1968); Clay W. Whitaker, M.D. (Western Reserve, 1952); C. Emery Williams, M.D. (Louisiana, 1963).

Adjunct Assistant Professor: Blake S. Wilson, B.S. (Duke, 1974).

Consulting Associates: Peter G. Chikes, M.D. (North Carolina at Chapel Hill, 1972); Edward V. Hudson, M.D. (Bowman Gray, 1962); William B. Inabnet, M.D. (Louisiana, 1958); Charles H. Mann, M.D. (West Virginia, 1966); Hubert C. Patterson, M.D. (North Carolina at Chapel Hill, 1974).

Research Associate: Ellen Covey, Ph.D. (Duke, 1980).

DIVISION OF PLASTIC AND MAXILLOFACIAL SURGERY

Professor: Donald Serafin, M.D. (Duke, 1964), *Chief*.

Professors: Edward Clifford, Ph.D. (Minnesota, 1954); Nicholas G. Georgiade, D.D.S., M.D. (Duke, 1949); Robert M. Mason, D.M.D. (Kentucky, 1977), M.S.O. (North Carolina at Chapel Hill, 1979), Orthodontics; Galen W. Quinn, D.D.S. (Creighton, 1952), Orthodontics.

Associate Professors: John C. Angelillo, D.D.S. (Duke, 1970); Gregory S. Georgiade, M.D. (Duke, 1973); Ronald Riefkohl, M.D. (Tulane, 1972).

Associate Consulting Professor: Verne C. Lanier, Jr., M.D. (Vanderbilt, 1966).

Assistant Professors: William J. Barwick, M.D. (Tennessee, 1971); James A. Hoke, D.D.S. (Ohio State, 1972), M.S. (Michigan, 1976), Dentistry; W. Christopher Pederson, M.D. (Texas Southwestern, 1978); Gregory L. Ruff, M.D. (Michigan, 1978).

Assistant Medical Research Professor: Bruce M. Klitzman, B.S.E. (Duke, 1974), Ph.D. (Virginia, 1979).

Consulting Associates: Lawrence E. Scheitler, D.D.S. (Maryland, 1975), Dentistry; James T. White, D.D.S. (Loyola, 1966), M.S. (North Carolina at Chapel Hill, 1976), Dentistry.

Research Associate: Ruth S. Georgiade, M.A. (Duke, 1950).

DIVISION OF UROLOGIC SURGERY

Professor: David F. Paulson, M.D. (Duke, 1964), *Chief*.

Professors: E. Everett Anderson, M.D. (Duke, 1958); Lowell R. King, M.D. (Johns Hopkins, 1956).

Associate Professors: Culley C. Carson III, M.D. (George Washington, 1971); George D. Webster, M.B., Ch.B. (Univ. Coll. of Rhodesia, 1968); John L. Weinerth, M.D. (Harvard, 1967).

Associate Consulting Professors: John H. Grimes, M.D. (Northwestern, 1965); Jack Hughes, M.D. (Pennsylvania, 1943).

Assistant Professors: Andrew F. Meyer, M.D. (New York, 1969); Philip J. Walther, M.D., Ph.D. (Duke, 1975).

Visiting Assistant Professor: Niall T. M. Galloway, M.B., Ch.B. (Aberdeen University, 1974).

Assistant Medical Research Professors: John W. Day, Ph.D. (Iowa, 1972); Karen S. Webb, Ph.D. (North Carolina at Chapel Hill, 1973).

Assistant Consulting Professors: A. James Coppridge, M.D. (Virginia, 1953); Joseph A. Fernandez, M.D. (Mississippi, 1975); Hector H. Henry II, M.D. (Tulane, 1965); Raymond E. Joyner, M.D. (Bowman Gray, 1968); Champil A. Ninan, M.D. (Christian Medical College, Vellore, India, 1957); Sigmund I. Tannenbaum, M.D. (Duke, 1975); Edwin M. Tomlin, M.D. (Tennessee, 1946).

Associate: Steven H. Herman, Ph.D. (Duke, 1977).

Consulting Associates: James A. Bergant, M.D. (Kansas, 1969); Alexander Maitland III, M.D. (Yale, 1955); Randall B. Vanderbeek, M.D. (Duke, 1963).

Medical Center Instructors: Robert W. Andrews, M.D. (Bowman Gray, 1980); Oscar W. Brazil, Jr., M.D. (Louisiana, 1961).

PROGRAM IN HEARING AND SPEECH DISORDERS

Professor: LuVern H. Kunze, Ph.D. (Iowa, 1962), *Director*.

Associate Professor: Bruce A. Weber, Ph.D. (Illinois, 1966).

Assistant Clinical Professor: John E. Riski, Ph.D. (Florida, 1976).

Assistant Consulting Professor: Jennifer Horner, Ph.D. (Florida, 1977).

Associates: Burton B. King, M.A. (Northwestern, 1955); Robert G. Paul, Ph.D. (Oklahoma, 1969).

Emeriti: Lennox D. Baker, M.D.; John E. Dees, M.D.; Clarence E. Gardner, Jr., M.D.; Keith S. Grimson, M.D.; Guy L. Odum, M.D.; Raymond W. Postlethwait, M.D.; Will C. Sealy, M.D.; James H. Semans, M.D.; William W. Shingleton, M.D.

Required Course

SUR-205. The required course in surgery, is given in the second year and consists of an eight week clinical clerkship. The primary goal is the presentation of those concepts and principles which characterize the discipline of surgery. The fundamental features which form the foundation of surgical practice are presented at seminars three times weekly. The subjects discussed include antisepsis, surgical bacteriology, wound healing, inflammation, fluid and electrolyte balance, shock, the metabolic response to trauma, biology of neoplastic disease, gastrointestinal physiology and its derangements, and blood coagulation, thrombosis, and embolism.

The students are divided into two groups, one at Duke and the other at the Veterans Administration Medical Center, and each works with two members of the surgical faculty. Students are assigned patients on the surgical wards for diagnosis and management, and clinical rounds are made three times weekly with the faculty. A full-time teaching resident is assigned for the course in order to provide the students with continuous and readily available instruction at all times. A one hour session is devoted daily to demonstrations by the surgical specialties including neurosurgery, orthopaedics, otolaryngology, plastic surgery, and urology. The students attend a weekly session in experimental surgery, during which each student serves in rotation as the anesthesiologist, first assistant, and operating surgeon in performance of surgical procedures on experimental animals.

Electives

SUR-219(C). Advanced General and Thoracic Surgery. (Veterans Administration Medical Center). The student will function as a subintern in surgery. Special attention will be given to those subjects in surgery common to all medical practices. Patients will be assigned to the students who will assume primary responsibility for their care under the supervision of the faculty and residents. The major emphasis will be on physiologic and pathologic changes, diagnosis, indications for operation, and observation of surgical procedures. Prerequisite: Permission of Dr. Grant. Weight: 8. *Grant and Wolfe*

SUR-221(C). Surgical Specialties and Ophthalmology (Veterans Administration Medical Center). The student will attend selected conferences of all the surgical specialties and ophthalmology. Additionally, the student will select two or three of these specialties in which to concentrate experience (on one service at a time) in the operating rooms, clinics, and wards of the VA Medical Center. Pathophysiology, diagnosis, and treatment will be emphasized. Weight: 8. *Grant, Walther, Tiedeman, McCuen, Fisher, Friedman, Harrelson, and Barwick*

SUR-222(C). Clinical Dentistry. Normal and abnormal development of head, face, jaws, and oral structures. Importance of teeth for mastication, speech, deglutition, growth and development, esthetics, general health, and for treatment of congenital and acquired abnormalities of the cranium, face, and jaws. Examination, diagnosis, and treatment of

pediatric to geriatric oral dental disease. Orthodontic, surgical, and/or orthodontic-surgical management of orodentofacial problems. Weight: 1. *Quinn and Angelillo*

SUR-227(C). Advanced Urologic Clerkship. The diagnosis, management, and surgical treatment of patients with urologic disorders will be stressed. Students will be afforded intimate association with the entire staff in the clinics, wards, and operating rooms and will participate in surgery. Cystoscopic and urographic diagnostic methods along with other techniques will be taught. Weight: 8. *Paulson, Anderson, King, Weinerth, Webster, Carson, Walther, and Dunnick*

SUR-228(C). Clerkship in Pediatric Urology. Designed to give an overview of urologic problems in the pediatric population. Will include patient contact and seminar material as well as ward and operating room experience in the diagnosis, treatment, and long-term followup of children with urologic disease. Weight: 4. *King*

SUR-230(C). Seminar in Urologic Diseases and Techniques. Lecture-seminar course by members of the staff in urology and radiology, providing an introduction to the spectrum of urologic diseases, amplified by demonstration of urologic and radiologic diagnostic methodology. Clinical problems to be stressed include pediatric urology, obstructive uropathies, urinary calculi, male infertility, impotence, trauma, urodynamics, reconstructive urology and urologic malignancies. Informal seminars given weekly. Weight: 8. *Paulson, Anderson, King, Weinerth, Webster, Carson, Walther, and Dunnick*

SUR-233(C). Basic Neurosurgery Course. Disease conditions commonly encountered in neurosurgery are presented. Clinical presentation of a disorder, such as brain tumor or head injury, is made by a member of the staff. Clinical features and plan of diagnostic investigation are stressed. The clinical disorder is used as a focal point from which to carry the presentation into the basic sciences are related to the clinical problem. Prerequisite: The student must have the approval of Dr. Cook to register for this course. Weight: 1. *Cook, Wilkins, Kramer, Oakes, and Friedman*

SUR-234(C). Pediatric Neurosurgery. Survey of the major neurosurgical topics encountered in the pediatric age group. Emphasis will be given to the demonstration of clinical findings, necessary radiographic evaluation, and therapeutic alternatives in selected disease processes. Prerequisites: the student must have approval of Dr. Oakes to register for this course. Weight: 1. *Oakes*

SUR-235(C). Clinical Neurosurgery. Course is designed for those students with a career interest in the neurological sciences. Duties include the workup and care of inpatients, workup of clinic patients, assistance in the operating room, daily rounds, and night call. Weekly conferences are held in neurosurgery, neurology, neuropathology, and neuroradiology. There are also special lectures. Prerequisite: the student must have the approval of Dr. Wilkins to register for this course. Weight: 8. *Wilkins, Nashold, Cook, Kramer, Oakes, and Friedman*

SUR-236(C). Intermediate Clinical Neurosurgery. This elective, intended as an intermediate experience between SUR-233(C) and SUR-235(C), focuses on the clinical presentation of common neurosurgical disorders, radiographic evaluation, and therapeutic options including the indications and contraindications for surgical intervention. The student will workup one to three patients in the evening and assist at their operations the following day either once or twice per week and will attend the 8 A.M. Saturday neurological conference. Prerequisite: permission of instructor. Weight: 1 or 2. *Wilkins*

SUR-237(C). Investigative Neurosurgery. The student is assigned a project relating to the neurological sciences and, within reason, is provided with technical help, recording equipment, and experimental animals necessary for its completion. Each student plans and executes an individual project, with the help of the neurosurgery staff. Attendance at weekly conferences is required. Prerequisite: the student must have the approval of Dr. Wilkins to register for this course. Weight: 8. *Wilkins, Nashold, Kramer, and Friedman*

SUR-239(C). Clinical Otolaryngology. This course will provide the student with a comprehensive survey of clinical otolaryngology. Duties will include participation in both outpatient clinic activities and inpatient care in addition to assisting in the operating room. The student will participate in ward rounds and in the various conferences held by the division. Weight: 4 or 8. *Hudson, Kenan, Cole, Farmer, and Fisher*

SUR-240(C). Otolaryngology Seminar. This conference and demonstration course will provide an introduction to a variety of clinical problems in otolaryngology. Lectures will be supplemented with case presentations illustrating problems encountered in this field. Weight: 1. *Hudson*

SUR-242(C). Biological Basis of Hearing. An examination of the relation of anatomy and physiology of the central auditory system to auditory discriminations. Original papers on neuroanatomy, electrophysiology, and psychophysics of hearing will be read and discussed. Also listed as Psychology 286 in the Graduate School Bulletin. Weight: 3. *Casseday*

SUR-244(C). Introduction to Plastic, Reconstructive, and Maxillofacial Surgery. This course is designed for students who may have a future interest in plastic surgery. Duties include the preoperative evaluation of patients, assisting in the operating room, making daily ward rounds and the participation in conferences. Weight: 4. *Serafin, Barwick, G. Georgiade, N. Georgiade, Pederson, Riefkohl, and Ruff*

SUR-245(C). Advanced Plastic, Reconstructive, and Maxillofacial Surgery. This course is designed for students with a demonstrated interest in plastic and reconstructive surgery. Duties include active participation in the care of patients on the resident service. Emphasis is placed on preoperative evaluation, assisting in the operating room, making daily ward rounds, and the participation in conferences. Students will also be expected to attend the cleft palate board and resident clinics. Responsibilities also include participation in the care of acutely injured patients treated in the emergency room. Weight: 8. *Serafin, Barwick, G. Georgiade, N. Georgiade, Pederson, Riefkohl, and Ruff*

SUR-246(C). Clerkship in Plastic and Reconstructive Surgery. The student participates in evaluation and management of plastic surgery patients, including preoperative assessment, surgical assistance, and postoperative follow-up in a private office and at Durham County General Hospital. Daily seminars cover core topics such as skin and soft tissue tumors, hand injuries, congenital defects, maxillofacial trauma, burns, surgical techniques, wound healing, and scars. Prerequisite: permission of instructor. Weight: 4. *Lanier*

SUR-247(C). Plastic Surgery Research. Students will be involved in patient care and all phases of a research project related to microvascular, plastic, and/or reconstructive surgery. Participants will design, execute, and analyze experiments. Publishing results in journals and presenting findings at national meetings will be emphasized. Weight: 1-8. *Klitzman, Serafin, and staff*

SUR-255(C). Directed Study in Speech/Language Pathology and Audiology. Individual directed study in selected topics concerning normal and abnormal hearing, language and speech functions. In consultation with a faculty member, each student will select one or more topics within the following areas: (a) the auditory system and hearing loss; (b) development and disorder of language and speech of children; (c) language and speech disorders of neurologically impaired adults (aphasia, dementia, neglect, dysarthria, dysphagia syndromes); (d) voice disorders and laryngectomy; (e) speech disorders secondary to cleft palate and other craniofacial anomalies; (f) stuttering. Emphasis on fundamentals of normal and abnormal function and principles of evaluation and management of disorders in each area. Prerequisite: permission of instructor. Weight: 1. *Kunze, Weber, Riski, and King*

SUR-259(C). General Principles of Orthopaedics. A full-time or part-time experience on the orthopaedic service with duties and responsibilities similar to a junior intern. Inpatient care, outpatient examination, and operating room experiences are included. Individual or group discussions each day with attending staff. The purpose of the course is to present broad concepts of orthopaedics to students planning general practice, pediatrics, allied surgical specialties, or orthopaedics. Weight: 4 or 8. *Urbaniak, Clippinger, McCollum, Bassett, Harrelson, Hardaker, Nunley, R. Goldner, Garrett, L. Goldner, Fitch, Lang, and Richardson*

SUR-261(C). Office and Ambulatory Orthopaedics. A full or part-time experience on the orthopaedic service with duties and responsibilities similar to a junior intern. Inpatient care, outpatient examination, and operating room experiences are included. Individual or group discussions each day with attending staff. The purpose of the course is to offer clinical experience to students who have completed Surgery 259(C). Rotations will be similar to those of Surgery 259(C). Prerequisite: SUR-259(C). Weight: 8. *Bassett, Clippinger, J. Goldner, McCollum, Urbaniak, Bugg, Coonrad, Lincoln, Glasson, Lang, Frank, Harrelson, Hardaker, R. Goldner, Garrett, and Nunley*

SUR-267(C). Introductory Clinic Course in Cerebral Palsy and Children's Orthopaedics. This introductory clinic course is arranged for those interested in neurological disease, pediatric orthopaedic problems, and related fields. This will give the student a working experience in the examination and evaluation of patients under clinical conditions which demonstrates both the individual and multidisciplinary group approach to the whole patient with complex neurologic and orthopaedic conditions as they affect both growth and development. Outpatients and inpatients are utilized for subject material. Staff personnel readily available for individual discussion and seminars. Weight: 2 or 4. *Coonrad, Fitch, Goldner, and cerebral palsy staff*

SUR-276(C). Advanced Clerkship in Pediatric Surgery. This course is designed to familiarize the student with the whole range of surgical problems in children but with emphasis on the pathophysiology of surgical and related problems in the newborn infant and the total care of the child with a malignancy. The student is encouraged to participate fully in the patient care aspects of the service, and is considered an integral part of the patient care team. Although the course may be taken for the full eight weeks, it is felt that a four-week experience is probably optimal for most students. It may be combined with other advanced surgical clerkships, such as Surgery 299(C); or with four weeks of neonatology, Pediatrics 225(C); or other courses depending on the interests of the student. Prerequisites: Brief pre-enrollment interview with Dr. Filston. Weight: 4 or 8. *Filston and Shorter*

SUR-277(C). Orthopaedic Research. Individual projects are assigned for completion during a limited period of time. A student works with an investigator in the orthopaedic laboratory either at Duke Medical Center or the Durham Veterans Administration Medical Center. Clinical investigative studies are also available at both institutions. Weight: 8. *Urbaniak, Harrelson, R. Goldner, Garrett, Nunley, orthopaedic senior staff, and house staff*

SUR-281(C). Introduction to Fractures and Musculoskeletal Trauma. Students will participate in the emergency management of patients through the Duke Emergency Room primarily, but also through Durham County General Hospital. Principles of fractures in trauma will be given throughout the week at specified times and attendance at fracture conference will be required on Tuesdays and Wednesdays at 7:00 A.M. Participation in orthopaedic clinic (seeing patients) one day per week is required. Weight: 3. *Entire orthopaedic staff at Duke and Durham County General Hospital supervised by Dr. Urbaniak at Duke, Dr. Lincoln at Durham County General Hospital*

SUR-282(C). Advanced Surgery—Emphasis Cancer. Advanced concepts in surgical oncology will be presented in seminars, and in ward, tumor clinic, and operating room experiences. Seventy-five percent of student time will be devoted to clinical cancer management and related basic science topics. The remaining 25 percent will relate to surgery in general. Weight: 8. *Seigler, Leight, Iglehart, Meyers, and Wolfe*

SUR-283(C). Advanced Surgery—Emphasis Cardiovascular-Thoracic. Advanced concepts in surgery will be presented in seminars and in ward, clinic, and operating room experiences. Fifty to 75 percent of the time will be devoted to cardiovascular-thoracic surgery and related basic topics, and the remainder to surgery generally. Weight: 8. *Sabiston, Jones, Lowe, Oldham, Rankin, Ungerleider, Van Trigt, Wechsler, Wolfe, and Young*

SUR-284(C). Advanced Surgery—Emphasis Transplantation. Advanced concepts in surgery will be presented in seminars, and in ward, clinics, and operating room experience. Fifty percent of the time will be devoted to clinical transplantation of the kidney and liver and related basic topics, and the remainder of the time will be spent on surgery generally. Weight: 8. *Bollinger, Amos, McCann, Meyers, Seigler, Stickel, and Weinerth*

SUR-299(C). Advanced Surgical Clerkship. This course is structured to provide the student with a comprehensive approach to surgical disorders. Each student will choose to work in the clinics, on the wards, in the operating room and in the laboratory with one senior surgeon. Advanced concepts in surgery will be taught and problem solving techniques will be demonstrated. Weight: 4-8. *Sabiston, Akwari, Bollinger, G. Georgiade, Grant, Iglehart, Jones, Leight, Lowe, Meyers, McCann, Oldham, Pappas, Peete, Rankin, Seigler, Smith, Stickel, Ungerleider, Van Trigt, Vernon, Wolfe, and Young*

SUR-301(C). Emergency Department Surgical Care. Students desiring additional experience working with care of emergency surgical patients will be assigned to the emergency department one night per week for each credit desired. They will participate in the diagnosis and care of acute and traumatic surgical emergencies. Weight: 1-3. *Stickel and G. Georgiade*

SUR-303(C). Trauma Service. This course is designed to provide students interested in trauma care with further experience both in the Emergency Department and on the inpatient Trauma Service. The course will emphasize both triage and resuscitation for major and minor emergency problems in the Emergency Department and also preoperative and postoperative care on the inpatient Trauma Service. The student will have a full-time experience by assuming duties and responsibilities similar to a junior intern. Emphasis will be placed on developing skills in the care of patients with multisystem injuries in the Emergency Department, Inpatient Service, and Operating Room. Students will work in conjunction with the attending staff and the residents on the trauma service. Weight: 4. *Moylan and G. Georgiade*

SUR-304(C). Nutrition in the Hospitalized Patient. This course is designed to acquaint students with the techniques of nutritional assessment including somatic protein, visceral protein mass, body fat mass, immune competence, and metabolic balance studies. Students will learn to determine basal energy expenditure and nitrogen requirements. The metabolic effects of acute and chronic starvation as well as stress and infection and the role played by these events in the hospital course of patients will be studied. Emphasis will be placed on techniques of nutritional support including routine and specialized hospital diets, routine and modular tube feeding diets, peripheral intravenous protein sparing, and total parenteral nutrition. At the completion of the course, students will have a thorough grasp of clinical nutrition and be able to apply specialized oral diets, tube feeding diets, and intravenous nutrition. Weight: 1. *Grant*

Special Interdisciplinary Course

IND-300(B) or (C). Interdisciplinary Seminar in Medical-Legal-Ethical Issues. The seminar will be composed of students in approximately equal number from the Medical, Divinity, and Law Schools, and will explore important medical, legal, and ethical features of current issues (e.g., transplantation, euthanasia, abortion). Faculty and resource persons from all three schools will participate in the seminar. Up to four introductory sessions in the fall semester for all participating students and faculty will be concluded with arrangement of interdisciplinary terms and selected topics. Student teams will meet during the winter and consult at intervals with faculty. All semester participants will reassemble for a series of weekly meetings ending in mid-March, to present and discuss the topics researched. Any topics, properly focused, may be considered. Weight: 2. *Gianturco (medicine), Shimm (law), Smith (divinity) and other faculty members from all three schools*

Special Interdisciplinary Training Programs

BMS-301(B). Biometry and Medical Informatics Study Program. This study program offers students the opportunity to explore, in the context of a biomedical application, one or more of the basic disciplines by which data are collected and stored, data are managed and communicated, hypotheses are constructed, data are evaluated and knowledge is integrated. These core disciplines include: artificial intelligence, instrumentation, imaging, signal analysis, simulation and modeling, and systems development. The emphasis, therefore, is on study and research into the methodological principles of biometry and medical informatics which are involved in biomedical problem-solving situations rather than on the area of biomedical science in which the application occurs.

Because of the multidisciplinary nature of this program, each student will select two faculty preceptors: a discipline preceptor will have a background in biometry, computer science, or engineering; an applications preceptor will have a background in a medical basic science or clinical science area and will be involved with a project utilizing one of the disciplines that constitute biometry and medical informatics. The student, together with the faculty preceptors, will design an appropriate study plan which concentrates on one or two core disciplines. This plan will consist of the following three components:

1. Individual research project: Under the supervision of the discipline and applications preceptors, students will participate in an individual research experience which will constitute the major component of the study program. This experience will be structured to provide an indepth exposure to the use of techniques from the core discipline to address a real world biomedical problem.
2. Courses: An overview seminar will expose each student to the vocabulary and the basic principles and concepts of each of the core disciplines. In addition to this required course, each student will be expected to acquire some depth of knowledge in the core disciplines chosen for concentration through a selection of two or three discipline-specific courses: BMI-211(B) Probability and Statistical Inference; BMI-212(B) Design of Etiological, Clinical and Experimental Studies; BMI-213(B) Medical Data Management and Statistical Computing; BMI-217(B) Clinical Decision Analysis; BMI-233(B) Biomedical Uses of Computers; BMI-234(B) Artificial Intelligence in Medicine; BMI-235(B) Microprocessors and Digital Instruments; CFM-240(B) Epidemiologic Methods in Primary Care Research; BME-204 Measurement and Control of Cardiac Electrical Events; BME-233 Modern Diagnostic Imaging Systems; CPS-241 Data Base Methodology.
3. Research seminar: Throughout the year, students and faculty members will meet regularly to review ongoing research in the core disciplines. Students will be expected to present their work in this context as a means of developing presen-

tation skills and obtaining input from investigators who are not directly involved in their project.

Program faculty: Roger C. Barr, Ph.D.; W. Eugene Broadhead, M.D.; William E. Hammond, Ph.D.; Frank E. Harrell, Jr., Ph.D.; Joseph M. Kootsey, Ph.D.; Kerry L. Lee, Ph.D.; Kathryn Magruder-Habib, Ph.D.; Lawrence H. Muhlbaier, Ph.D.; David B. Pryor, M.D.; Stephen J. Riederer, Ph.D.; Charles F. Starmer, Ph.D.; William W. Stead, M.D. and William E. Wilkinson, Ph.D.

Weight: 18 credits per term.

Program directors: Drs. Wilkinson and Stead

BPE-301(B). Biophysics/Bioengineering Study Program. This interdepartmental program will provide an opportunity for medical students in the elective year to participate in research in several areas of basic and clinical medicine where quantitative and engineering methods are employed. The range of subject material included in the program is broad, ranging from the development of instrumentation to theoretical studies on chemical and physical mechanisms in biomedical systems. Some example areas are the development and application of new imaging techniques and the application of computer simulation to the study of biochemical and physiological systems.

In this program, each student will select a faculty preceptor in consultation with the program directors and will design an individual plan in cooperation with the preceptor and directors. The primary emphasis of each student's plan is expected to be research. Students may, however, also be advised to take an existing course or to set up a tutorial with a faculty member to fill in deficient areas or to acquire needed quantitative or engineering skills. Depending on the subject area selected, a student may initiate a new research project of limited scope or take over a well-defined part of an existing project. Students will be expected to produce some form of written summary of their work, possibly (but not necessarily) a paper suitable for publication in a scientific journal.

Students taking this program should have some prior training or experience in one or more of the following areas: mathematics, computer science, physics, chemistry, or engineering (electrical, mechanical, biomedical, etc.).

Participating faculty: Jacob J. Blum, Ph.D.; Mark W. Dewhirst, D.V.M., Ph.D.; Eric L. Effmann, M.D.; C. Craig Harris, M.S.; Robert J. Herfkens, M.D.; Michael L. Hines, Ph.D.; Ronald J. Jaszczak, Ph.D.; Frans F. Jobsis, Ph.D.; Edward A. Johnson, M.D.; G. Allan Johnson, Ph.D.; Robert H. Jones, M.D.; Michael C. Kohn, Ph.D.; J. Mailen Kootsey, Ph.D.; John W. Moore, Ph.D.; James R. Oleson, M.D., Ph.D.; H. Dirk Sostman, M.D.; Madison S. Spach, M.D.; Leonard D. Spicer, Ph.D.; C. Frank Starmer, Ph.D. and Michael R. Zalutsky, Ph.D.

Weight: 18 credits per term.

Program Directors: Drs. Allen Johnson and Mailen Kootsey

BSP-301(B). Biobehavioral Study Program. The study program is oriented toward the medical student's obtaining an understanding of basic processes underlying normal and pathological human behavior. The course and preceptorship offerings are designed to familiarize the student with significant developments in the behavioral sciences, investigative methodology used to examine human behavior and its neurobiological underpinnings, and the application of findings to medicine.

Students are encouraged to select an area of research concentration and arrange to choose a faculty member as a research preceptor by contacting the study program director to discuss their interests. They will be given the opportunity to focus on some determinant of human behavior which may include biological, psychological, developmental, or social factors. Students may choose to spend a significant portion of their time in closely supervised laboratory and associated library research in an area of the student's interest, resulting in a report of the work. Specific science interests can be augmented through seminars, guided readings, and appropriate courses providing a greater familiarity with current issues in the biobehavioral sciences.

The following course is required of all students: PSC-223(B) Neurological Basis of Behavior.

Alternatives to the intensive research concentration are also offered. In addition to courses in the department of psychiatry, students may take part in other study programs or take courses given in the medical and graduate schools.

Faculty members who are potential research preceptors have been identified for those students wanting an intensive research experience: Garth Bisette, Ph.D.; Dan G. Blazer, M.D., Ph.D.; Bernard J. Carroll, M.D., Ph.D.; C. Edward Coffey, M.D.; Elaine Crovitz, Ph.D.; Everett H. Ellinwood, M.D.; Charles E. Erwin, M.D.; Linda K. George, Ph.D.; Clinton D. Kilts, Ph.D.; K. Ranga Rama Krishnan, M.D.; James E. Lee, M.D., Ph.D.; David J. Madden, Ph.D.; George L. Maddox, Ph.D.; Charles B. Nemeroff, M.D., Ph.D.; Kenneth Rockwell, M.D.; Susan S. Schiffman, Ph.D.; Ilene C. Siegler, Ph.D.; Richard S. Surwit, Ph.D.; Robert J. Thompson, Jr., Ph.D.; Richard D. Weiner, M.D., Ph.D.; Jay Michael Weiss, Ph.D. and Redford B. Williams, M.D.

Weight: 18 credits per term.

Program Director: Dr. Edward Clifford; Associate Director: Dr. Everett Ellinwood

CVS-301(B). Cardiovascular-Respiratory Sciences Study Program. The Study Program in Cardiovascular-Respiratory Sciences (CVS) is designed to offer third-year students instruction for one academic year in basic sciences as applied to the understanding of the cardiovascular system in health and disease. The interdepartmental program is comprised of two parts that run concurrently.

Individual Tutorial: The student will identify a member of the medical school faculty who is participating in the program. The major part of the educational program for the student will be an individual tutorial with this faculty member which may range from full-time laboratory research to library research. The student and the tutor will develop a detailed plan and the student will submit it to his or her study program adviser who will, in turn, present it to the study program executive committee for approval.

Group Seminars: Seminars will be held according to the needs and desires of the students, the purpose of which is to read and discuss selected papers and/or discuss problems and topics which arise in the course of their tutorials. Students will be active participants in the seminar, and through this mechanism it is hoped to integrate knowledge of cellular physiology into an understanding of organ system function and control.

The above plan provides a structured curriculum design. Within this framework multiple pathways are available. Tutorials can be arranged within any of the basic science departments or with individuals in clinical departments whose orientation or research is judged by the program executive committee to be consistent with the goals of the program. Once a tutor is identified, added flexibility is gained by having the option to elect courses or seminars in addition to the group seminar.

Participating preceptors: Page A. W. Anderson, M.D.; Enrico M. Camporesi, M.D.; Joseph Greenfield, M.D.; Edward A. Johnson, M.D.; Bruce Klitzman, Ph.D.; J. Mailen Kootsey, Ph.D.; Melvyn Lieberman, Ph.D.; Thomas J. McManus, M.D.; J. Scott Rankin, M.D.; Joachim R. Sommer, M.D.; Madison S. Spach, M.D.; Harold C. Strauss, M.D.; Judith L. Swain, M.D.; Andrew Wechsler, M.D.; and R. Sanders Williams, M.D.

Weight: 18 credits per term.

Program Director: Dr. Edward A. Johnson; Associate Directors: Drs. Page Anderson, Mailen Kootsey, Mel Lieberman, and Madison Spach

EDR-301(B). Endocrinology and Reproductive Biology Study Program. This interdepartmental program is designed to provide third-year medical students with an opportunity for in-depth study of cellular endocrinology, neuroendocrinology, and reproductive biology as these relate to the function of the endocrine and reproductive systems in health and disease. In this program, major emphasis is placed on development of a plan of independent study for each student which is based on a tutorial or preceptor association with an individual member of the program faculty. In addition, all members of the program, including faculty, meet as applicable for discussions, and guest lectures on selected topics of interest to the entire group. ANA/PHS 417, PHR-335, and ANA/PHS 418/424 are an integral part of the program. Although the program traditionally begins in September, its structure is potentially flexible enough to accommodate those who wish to begin in any term, including the summer term. It should be emphasized that while the primary aim of the program is to provide an intensive experience in endocrinology and reproductive biology, opportunity is provided within the program format for students to broaden their basic science background by taking courses which may be unrelated to the subject matter of the study program.

For all students, the program consists of the following components:

1. *An Individual Tutorial.* This is carried out under the supervision of one or more members of the program faculty selected by the student in consultation and with the approval of the program directors. This tutorial will generally involve laboratory research in a particular area of endocrinology or reproductive biology. Before entering the program, students are asked to complete their tutorial arrangements. To facilitate this process, the Program Director will direct students to appropriate members of the program faculty or other members of the Medical School faculty who hold a primary or secondary appointment in a basic science department and whose research interests would permit them to participate in the program.
2. *Lecture Courses.* Specific course offerings in this program are: PHR-335, Molecular Pharmacology; ANA/PHS 417, Cellular Endocrinology; ANA/PHS 418, Reproductive Biology; ANA/PHS 424, Seminar in Reproductive Biology. In order to provide additional breadth of preclinical experience related to immediate or long-term interests, students are encouraged to take up to four units of course work per term. As noted above, individual course selections are not limited to those related to endocrinology or reproductive biology, although consultation and approval by the Program Directors is required before making final selections.

Program faculty and major areas of specialization: Cellular and molecular endocrinology—Nels Anderson, M.D.; Perry Blackshear, M.D.; J. J. Blum, Ph.D.; Warner Burch, M.D.; Mark Caron, M.D.; Rosalind A. Coleman, M.D.; Marc Drezner, M.D.; Stuart Handwerger, M.D.; Ed Holmes, M.D.; Ken McCarty, Sr., Ph.D.; Ken McCarty, Jr., M.D., Ph.D.; George Padilla, Ph.D.; Judith Swain, M.D.; Steven R. Vigna, Ph.D.; Neuroendocrinology—Cynthia Kuhn, Ph.D.; Lee Tyrey, Ph.D.; Reproductive biology—Patricia Saling Ph.D. and David Schomberg, Ph.D.

Weight: 18 credits per term.

Program Coordinators: Drs. George M. Padilla and David W. Schomberg

ISP-301(B). Immunology Study Program. Objectives: this study program is designed for students whose career goals lie in one of the many clinical specialties which interface broadly with immunology; allergy-immunology, infectious diseases, rheumatology, hematology, transplantation, and oncology. A basic but thorough introduction to immunology is developed in MIC 291(B), which also emphasizes critical discussion of original research papers. A further and more clinically oriented analysis is provided in the core course, Medical Immunology (MIC-330B), which emphasizes the role of immunologic mechanisms in various human disease states. Each student chooses a faculty preceptor, with whom he/she works on an original research project. It is encouraged that the student not be merely injected into the continuum of the preceptor's research interests but, rather, that he/she develop an individual project which can be completed during the study program. The primary goals of the program are to encourage and develop the student's own creativity, to expose the student to the research interests and philosophies of the entire division and to help the student gain a useful personal perspective on current immunologic thought with an emphasis on clinical relevance. The student's efforts and time are generally divided as follows:

1. *Preceptorship.* The major emphasis of the program throughout the year, during which the student functions much as a graduate student in the division. 30 hours or more per week.
2. *Comprehensive Immunology (MIC-291B).* An in-depth course in the basic concepts of immunology. Analysis of antigens and antibodies is followed by an emphasis on the organization and cellular and molecular aspects of the immune system, its regulation and effector mechanisms. 4 hours per week, fall term.
3. *Medical Immunology (MIC-330B).* The basic concepts of immunochemistry and immunobiology are reviewed in the first two weeks, and the remainder of the course describes the role of these concepts in the pathogenesis and treatment of several human disease states. Emphasis is given to tumor immunology, immunohematology, immunologic deficiency diseases, neuroimmunology, trans-

plantation, autoimmunity, inflammation, and allergy. Patient presentations when applicable. Because the course meets daily, more than superficial coverage of the topics can be achieved. 5 hours per week, spring term.

4. *Seminars for Research Progress.* Throughout the year fellows and students in the division present brief informal seminars on their on-going research. The discussion that follows is of great help to the presenter and allows the student to observe and participate in critical analysis of research before it is at the publication or formal seminar stage. 1 hour per week.
5. *Immunology Division Seminar.* A series of formal seminars by division faculty and visiting scientists. 1-2 hours per week.
6. *Additional Course Work.* The student may elect to take any of several courses in immunology and related fields, but is generally discouraged from excessively diluting the laboratory experience.

Participating faculty and their research interests: D. B. Amos, M.D. (immunology); D. O. Adams, M.D. (pathology); Y. Argon, Ph.D. (immunology); A. Balber, Ph.D. (immunology); R. C. Bast, Jr., M.D. (medicine and immunology); R. R. Bollinger, M.D., Ph.D. (surgery and immunology); D. P. Bolognesi, Ph.D. (surgery and immunology); R. H. Buckley, M.D. (pediatrics and immunology); R. B. Corley, Ph.D. (immunology); P. Cresswell, Ph.D. (immunology); J. R. Dawson, Ph.D. (immunology); E. D. Day, Ph.D. (immunology); B. F. Haynes, M.D. (medicine and immunology); D. D. Kostyu, Ph.D. (immunology); R. S. Metzgar, Ph.D. (immunology); D. Pisetsky, M.D., Ph.D. (medicine and immunology); W. Rosse, M.D. (medicine and immunology); F. Sanfilippo, M.D., Ph.D. (pathology and immunology); K. H. Singer, Ph.D. (medicine and immunology); R. Snyderman, M.D. (medicine and immunology); F. Ward, Ph.D. (immunology).

Weight: 18 credits per term.

Program Director: Dr. Cresswell

IDP-301(B). Infectious Diseases Study Program. Objectives: Knowledge of infectious diseases is relevant to care of patients of all ages and in each clinical specialty from surgery, pediatrics and medicine to obstetrics-gynecology and family medicine. This study program is designed to provide students with the opportunity to directly explore one facet of infectious diseases in a laboratory setting coupled with several lecture/seminar courses designed to provide some breadth of knowledge of the host, microorganism, and their interactions. The goals of the program are to instill a critical assessment of information, to provide the opportunity for creative acquisition of data, to encourage independent thinking, and to provide insight into modern technology as well as to the interrelationship of clinical infectious diseases with basic microbiology and immunology.

Each student selects a faculty preceptor with whom to work on an original research project. It is expected that the student will develop his own project within the framework of a laboratory's interests but will design his own experiments, critically assess the relevant literature, learn to evaluate data, and have the opportunity to solve the problems associated with the project. Appropriate guidance and assistance will be provided by the faculty and others within the laboratory setting.

1. *Preceptorship.* This is the major emphasis of the program, with students functioning essentially as graduate students. 30 hours or more per week.
2. *Courses.* During the fall term students will be required to take one course, Principles of Infectious Disease (MIC-301B). This course provides discussion of the basic biology of a broad spectrum of microorganisms, the diseases they cause, and the host response to these infections. The first eight weeks of the term is devoted to bacterial infections and is organized by organ system. In the second eight weeks, viral diseases are presented, ranging from intrauterine infections to oncogenes. During the spring term students will be required to take either Medical Immunology (MIC-330B) or Virology and Viral Oncology (MIC-252B), the selection being determined by the student's laboratory research interests.
3. *Seminars.* Students in the Infectious Diseases Program will attend a weekly seminar in which faculty members, fellows and students present their ongoing research. Such presentations enable the student to observe and participate in critical analysis of research before it reaches the publication stage.

4. *Additional Course Work.* Whereas other basic science electives in microbiology and immunology may be taken upon approval by the Program Director, the student is discouraged from excessively diluting his laboratory experience.

Participating faculty: Dani P. Bolognesi, Ph.D.; Rebecca H. Buckley, M.D.; Vickers Burdett, Ph.D.; Wolfgang K. Joklik, D.Phil.; Jack D. Keene, Ph.D.; Thomas G. Mitchell, Ph.D.; Catherine Wilfert, M.D.
Weight: 18 credits per term.

Program Directors: Dr. Jack D. Keene and Dr. Catherine Wilfert

MCD-301(B). Molecular and Cellular Basis of Differentiation Study Program. Objectives: This study program is designed to provide an opportunity for third-year medical students to spend a year interacting with a group of basic science faculty who utilize many of the modern techniques of biochemistry and molecular biology as applied to problems of health and disease. The primary objective will be to present basic concepts of differentiation to include the organization and retrieval of genetic information, hormonal regulation of gene expression in the differentiated state, the modulation of the differentiated state in relation to the cell cycle, time space and patterns in developing systems as a consequence of the control of gene expression, and tissue interactions in morphogenesis and differentiation. The organization of genetic information includes evidence of the mechanism of gene amplification in development and drug resistance, recent concepts regarding enhancer modification of hormone response, and specific examples of hormone induced gene expression. The mechanism(s) involved in cell surface interactions in lymphocyte differentiation, the nervous system and extracellular matrix regulation of morphogenesis and differentiation will be discussed.

In order to provide a comprehensive coverage, the program has been organized on a multidisciplinary level to include selected faculty from biochemistry, physiology, pathology and anatomy.

Upon entrance into the program, the student, with the guidance of the program director, will interview members of the faculty as described below to select a mentor that will complement his or her career aspirations. The student in collaboration with the mentor will then prepare a brief outline of the goals to be accomplished. As the program develops the students will present a progress report, and in the final phase will provide a written report of the studies performed, detailing the initial hypothesis, the techniques that were learned, the results obtained and the conclusions. The report should contain a critique of the student's experience with suggestions for improvement in the overall program.

First semester: the first semester will consist of a series of lectures (see BCH 320B) given three times a week to cover basic principles and a series of seminars conducted by the students under the guidance of the mentor. The student will have complete freedom to interact with the faculty, postdocs, graduate students, with a schedule to provide a maximum time for the pursuit of his or her project to be conducted in collaboration with the mentor. This in no way excludes the possibility of attending one or two carefully selected courses that may complement his or her goals.

Second semester: the second semester will consist of lectures (see BCH 321B) given twice a week designed to extend and complement the information content provided in the first semester.

Opportunities for tutorials: Steroid hormones and differentiation—Drs. K. S. McCarty, Sr., George M. Padilla and Kenneth S. McCarty, Jr.; Polypeptide hormones and differentiation—Drs. Robert M. Bell and Perry J. Blackshear; Development, cell organelles and differentiation—Drs. Russell E. Kaufman, Sheila Counce and David M. Schlossman; Chromatin structure and function—Drs. Tao-shih Hsieh and Montrose Moses; DNA polymerases and DNA processing in differentiation—Drs. Paul L. Modrich, S. R. Gross, Deborah A. Steege, Arno L. Greenleaf, Ronald C. Greene, Patricia M. Saling and Frederick Schachat; Complex carbohydrates in cell recognition in differentiation—Drs. Robert L. Hill and Bernard Kaufman; Membranes, protein structure and function—Drs. David C. Richardson, Jane S. Richardson, Robert E. Webster, Robert J. Lefkowitz and Emma R. Jakoi; Enzymes in development and differentiation—Drs. I. Fridovich, Henry Kamin, K. V. Rajagopalan, Lewis M. Siegel, Michael S. Herschfield, and Nicholas M. Kredich
Weight: 18 credits per term.

Directors: Drs. Kenneth S. McCarty, Sr. and Sheila Counce

NSS-301(B). Neurosciences Study Program. The neurosciences study program offers the opportunity to learn basic sciences by focusing on the nervous system under careful supervision. Fundamental principles of physiology, biochemistry, pharmacology, and anatomy will be learned through informal study of organization and cellular neuroscience. The program lasts thirty-two weeks and emphasizes a basic research experience or tutorial under the guidance of a preceptor, a monthly seminar with visiting neuroscientists and the opportunity to audit appropriate neurobiology courses during the year. Students will be encouraged to read widely in areas of basic science under the tutelage of their preceptor.

1. *Research Experience:* The basic component of the Neurosciences Study Program is an indepth research experience in a basic science laboratory under the supervision of one of the participating faculty. The student is expected to use either (1) ongoing techniques in the laboratory to pursue a research problem and learn principles of experimental design, analytical techniques, statistics and scientific writing, or (2) pursue an indepth literature review focused on a fundamental question in basic neuroscience. No more than one student per research adviser is recommended.
2. *Seminar:* Throughout the year, students and faculty members meet monthly to informally review ongoing research. Some of these seminars are presented by visiting neuroscientists and allow the student to participate in open, critical discussion of laboratory investigations. Students are expected to present seminars in this context to help develop skills in presenting scientific information clearly and concisely.
3. *Formal Courses:* The Neurosciences Study Program is an informal learning experience in which the student is encouraged and supervised in acquiring basic science information at his/her own pace. Students may audit appropriate courses during the year but need not do so. Typical courses taken by previous students include ANA 266(B), PTH 353(B), PHR 360(B), PHR 364(B) and PHS 270(B), but any course can be taken with the approval of the student's preceptor and the study program director. Students are encouraged to attend the frequent neuroscience lectures given in various departments at the University and listed in the *Duke Neurotransmitter* (newsletter).
4. *Initial and Final Reports:* An important component of the program is the initial and final reports prepared by the student with the help of his/her preceptor. The initial report is a written statement of the student's goals for the year with a detailed plan for accomplishing these goals. Usually this takes the form of stating the problem to be studied, the hypothesis, and an outline of the work to be done. The final report will usually take the form of a research paper or literature review suitable for publication. Publication is not required, but many students have been successful in publishing a report with their preceptors.
5. *Participating Faculty:*

Dr. James N. Davis, Professor of Medicine (neurology) and Pharmacology. Neuronal rearrangements after brain injury. The laboratory uses brain catecholamine neurons as models for understanding neuronal plasticity using anatomical and biochemical techniques with an emphasis on neurotransmitter receptor pharmacology and brain anatomy.

Dr. Irving Diamond, Professor of Psychology and Physiology. The neocortex, its functional and structural subdivisions, and its evolution. The structural subdivision depends, first of all, on the differences in laminar organization, for example, cytoarchitectonics, and most importantly, on connections. The concern for the cortex naturally leads to the study of the dorsal thalamus since the projections from the thalamus to cortex hold the key to understanding the organization of cortex.

Dr. George Somjen, Professor of Physiology. The pathophysiology of the mammalian central nervous system is studied by electrophysiological and electrochemical techniques. Special topics include the mechanisms of seizures, the nature of hypoxic damage to the brain, and the regulation of ion concentrations in the brain.

Dr. John W. Moore, Professor of Physiology. Biophysics and physiology of nerve impulse propagation and synaptic transmission; computer modeling of neurons and networks.

Dr. Wilkie A. Wilson, Associate Professor of Pharmacology. The laboratory is exploring the regulation of excitability in the nervous system by physiological and pharmacological processes. Electrophysiological techniques are employed using neural networks from both mammals and invertebrates.

Dr. J. Victor Nadler, Associate Professor of Pharmacology. Excitatory amino acid neurotransmitters, models of temporal lobe epilepsy, neuronal plasticity and recovery of function after lesions.

Dr. Norman Kirshner, Professor of Pharmacology and Biochemistry. Biogenesis of chromaffin vesicles; mechanisms of catecholamine synthesis and secretion.

Dr. Saul Schanberg, Professor of Pharmacology and Biological Psychiatry. Animal model of the maternal deprivation syndrome; regulation of hormone responses by the brain; neuropharmacology of amphetamines.

Dr. Avis L. Sylvia, Associate Medical Research Professor in Physiology. Cerebral oxidative metabolism, in vivo monitoring of brain cellular metabolism in animals and man.

Dr. Mohamed B. Abou-Donia, Professor of Pharmacology. Neurotoxicology including the mechanisms of enurotoxic actions, interactions, and pharmacokinetics of neurotoxicants. These chemicals include organophosphorus esters capable of causing delayed neurotoxicity and organic solvents.

Dr. William G. Hall, Professor of Anatomy and Psychology. Anatomical and physiological basis for sensori-motor integration in the central nervous system: the role of the superior colliculus in the control of eye movements.

Dr. Nell B. Cant, Associate Professor of Anatomy. Neuroanatomy of the auditory system; correlations of structure (synaptic organization) and function.

Dr. Theodore A. Slotkin, Professor of Pharmacology and Psychiatry. Development of nervous system with particular attention to processes regulating maturation of synapses. Ongoing research includes studies of molecular biology of developing neurons, physiological function of autonomic pathways and adverse effects of exposure of the developing animal to toxic chemicals, drugs of abuse, or environmental stress.

Dr. Chia-Sheng Lin, Assistant Professor of Anatomy. The mechanisms underlying the functional organization and reorganization at the level of single neurons. Combined neuroanatomical, neurophysiological, and immunocytochemical techniques will be used.

Dr. James McNamara, Professor of Medicine (neurology) and Associate Professor of Pharmacology. Biochemical basis of epilepsy; studies of brain neurotransmitter receptors in animal models of seizures; study of the functional neuroanatomy of brain structures underlying seizures.

Dr. Darrell V. Lewis, Associate Professor of Pediatrics (neurology) and Assistant Professor of Physiology. The physiological and biochemical basis of seizure onset and termination, and mechanisms of synaptic plasticity in epileptogenesis are explored using the in viro hippocampal slice preparation.

Dr. Laura Schweitzer, Assistant Medical Research Professor of Anatomy. Neuroanatomical development of the mammalian auditory system.

Dr. David Fitzpatrick, Assistant Professor of Anatomy and Psychology. Structure and function of the lateral geniculate nucleus and the visual cortex in mammals using neuroanatomical tracing techniques, immunocytochemical localization of neurochemical markers at the light and EM levels, and intracellular injection of physiologically characterized neurons.

Dr. Donald Schmechel, Assistant Professor of Neurology. Biochemical anatomy of the nervous system, particularly biochemical correlates of neuronal development, differentiation and injury. Our major current project is the investigation of an animal model of age-related cholinergic injury in bushbabys, a small prosimian species. Studies in this species will be compared to data from humans with Alzheimer's Disease. Methods include hybridization histochemistry, immunocytochemistry, and biochemical assay. These methods are used to demonstrate specific cell classes (gabaergic and cholinergic), and the status of pathways related to neuronal glycolysis, cytoskeletal proteins, and free-radical related enzymes.

Dr. Douglas C. Anthony, Assistant Professor of Pathology and Dr. Doyle G. Graham, Professor of Pathology. There are two principal directions in this laboratory: (1) mechanisms of action of neurotoxic compounds including n-hexane peripheral neuropathy, IDPN waltzing syndrome, and manganese-induced parkinsonism, and (2) the biology of the axonal cytoskeleton in response to injury. Weight: 18 credits per term.

Director: Dr. James N. Davis; Associate Director: Dr. Wilkie Wilson
Weight: 18 credits per term.

Directors: Drs. Donald Hackel, William D. Bradford and Steve Vogel

PSP-301(B). Pathology Study Program. Pathology is the study of disease that utilizes structural and functional changes to gain information about the human organism's response to injury. The goal of the pathology study program is to provide the medical student an indepth and thorough learning experience in the anatomical basis of disease, under the guidance of a senior faculty preceptor. The essential elements of this pro-

gram are (1) organized course work, (2) independent but guided research experience (bench or library), and (3) active participation in small group seminars.

To meet the diverse interests and needs of Duke medical students, there will be three tracks within the pathology study program.

The Department of Pathology will host an "open house" in the Central Teaching Facility where interested students may visit with study program advisors and other members of the faculty. Following the general information session, interested students will meet with advisors to establish interviews for individual mentors. Every student will have a study program advisor, and an individual preceptor.

Participating faculty: Dolph O. Adams, M.D., Ph.D.; Darell D. Bigner, M.D., Ph.D.; Michael J. Borowitz, M.D., Ph.D.; Edward Bossen, M.D.; William D. Bradford, M.D.; Peter C. Burger, M.D.; Barbara Crain, M.D., Ph.D.; James D. Crapo, M.D.; Jane T. Gaede, M.D.; Donald B. Hackel, M.D.; Tom Hamilton, Ph.D.; Raymond E. Ideker, M.D., Ph.D.; Gordon K. Klintworth, M.D., Ph.D.; John A. Koepke, M.D.; James E. Lowe, M.D.; Kenneth S. McCarthy, Jr., M.D., Ph.D.; George Michalopoulos, M.D., Ph.D.; Eileen M. Mikat, Ph.D.; Salvatore V. Pizzo, M.D., Ph.D.; Philip C. Pratt, M.D.; Alan Proia, M.D.; Keith A. Reimer, M.D., Ph.D.; Victor L. Roggli, M.D.; Fred Sanfilippo, M.D., Ph.D.; S. Clifford Schold, Jr., M.D.; John D. Shelburne, M.D., Ph.D.; Marcus B. Simpson, M.D.; Joachim Sommer, M.D.; Charles Steenbergen, M.D.; Cheryl A. Szpak, M.D.; F. Stephen Vogel, M.D.; and Frances Widmann, M.D.

Weight: 18 credits per term.

Directors: Drs. Donald Hackel, William D. Bradford and Steve Vogel

SPV-301(B). Sensory Physiology and Visual Sciences Study Program. This interdepartmental program will provide medical students in the elective year an opportunity for indepth study and research in the physiology and structural correlates of sensory systems as they relate to their function in health and disease. The major emphasis of the program will be on the major sensory systems, with emphasis on olfaction, taste and program emphasis will be placed on the development of a plan of independent study based on a direct association of each student with an individual member of the program faculty in a tutorial or research setting.

Each student will select a faculty preceptor in consultation with the program directors. He/she will also design an appropriate study plan which may include but not be limited to courses offered within this study program. For guidance, a list of courses which are relevant to this program is enclosed. As applicable, students participating in this study program will meet as a group for discussions and presentation of seminars which will also involve participation by members of the program faculty and invited guest lecturers on subjects of interest to the entire group. A student will normally spend two terms in the program and receive full credit for the basic science elective requirement. Although the program will begin in September, its structure will be made flexible to accommodate those who may wish to begin in any term, including the summer term.

Students in this program will participate in the following components:

1. *Individual Tutorials.* Under the supervision of one or more members of the program faculty and upon consultation and approval by the program directors, students will participate in an individual tutorial experience. This will generally involve but need not be limited to laboratory research in a particular area of sensory physiology or visual sciences. Students are encouraged to complete their tutorial arrangements before entering the program. To facilitate this process the program directors will direct the students to the appropriate members of the program faculty or other members of the medical school faculty whose research interest would permit them to participate in this program.
2. *Lecture Courses.* Specific course offerings in this program are indicated below. In order to provide additional breadth to their preclinical experience students are encouraged to take up to four units of coursework per term. As noted earlier, courses that may be taken by students need not be limited to those related to sensory physiology or visual sciences but consultation and approval by the program directors is required before making final selections.

Basic science electives: ANA-225(B) Neurobiology of sensory systems; ANA-286(B) Electron microscopy and related techniques; ANA-311(B) Concepts in cell biology; ANA-320(B) Cell differentiation in development and disease; ANA-321(B) Hormone and tissue interactions in differentiation and disease; CFM-215(B) Biostatistics in the medical sciences; PTH-231(B) Ophthalmic pathology; PHS-219(B) Preceptorship in physiology; PHS-225(B) Neurobiology of sensory systems; PHS-270(B) Neurobiology; PHS-272(B) Physiology of the central nervous system.

Participating faculty: Robert R. H. Anholt, Ph.D.; Joseph M. Corless, M.D., Ph.D.; M. Joseph Costello, Ph.D.; Robert P. Erickson, Ph.D.; Diane L. Hatchell, Ph.D.; Gordon Klintworth, M.D., Ph.D.; Alan D. Proia, M.D., Ph.D.; Sidney A. Simon, Ph.D.; and Einar Stefansson, M.D., Ph.D.

Weight: 18 credits per term.

Program Directors: Drs. Diane L. Hatchell and Sidney A. Simon

ROSTER OF HOUSE STAFF BY DEPARTMENTS

Anesthesiology

Chief Residents: William Bundschuh, M.D. (New York, 1984); Norman Cohen, M.D. (Johns Hopkins, 1985).

Senior Residents: L. John Aladj, M.D. (Eastern Virginia, 1981); Christopher Caswell, M.D. (Temple, 1985); Dennis C. Doherty, D.O. (New Jersey, 1985); Maureen Doherty, D.O. (New Jersey, 1985); George Fant, M.D. (Tennessee, 1984); James P. Forensky, M.D. (New York Med. Coll., 1985); Peter Glass, M.D. (University of Witwatersrand, South Africa, 1979); Luis Gonzalez-Cuni, M.D. (Miami, 1983); Daniel A. Graubert, M.D. (New York Univ., 1985); Barrett Hall, M.D. (Oklahoma, 1984); Andrew Hart, M.D. (Iowa, 1984); Lewis R. Hodgins, M.D. (Downstate Med. Coll., 1985); Gennard Lanzara, M.D. (Eastern Virginia, 1984); Joseph Lu, M.D. (Minnesota, 1985); W. Michael Lyth, M.D. (Pittsburgh, 1985); Gerald Maccioli, M.D. (Nevada, 1984); Anthony Pollizzi, M.D. (New York Med. Coll., 1985); Kevin Sharer, M.D. (Illinois, 1984); Stephen Smith, M.D. (Oklahoma, 1984); Thomas Stanley, M.D. (Duke, 1981); Nicholas W. Tangreti, M.D. (New Jersey, 1983); Ramon Toscano, M.D. (New Jersey, 1985); Geoffrey L. Tyson, M.D. (Temple, 1982); Thomas B. Whalen, M.D. (Pennsylvania State, 1985); Jeffrey Williams, M.D. (Indiana, 1984).

Junior Residents: Jonathan Aarons, M.D. (Maryland, 1986); William Buhrman, M.D. (Duke, 1983); Christopher Cary, M.D. (Massachusetts, 1985); Jeffry Fassero, M.D. (Southern Illinois, 1986); Thomas Fawcett, M.D. (Duke, 1986); Caroline Lu, M.D. (Minnesota, 1985); Anthony Meluch, M.D. (Indiana, 1986); Michael O'Grady, M.D. (Ohio State, 1987); Armando Rocas, M.D. (University of Saragoosa Fac, Spain, 1984); Nevels Scott, M.D. (California at San Francisco, 1986); Timothy Vanderslice, M.D. (Louisiana State, 1983); Charles Veronne, M.D. (Duke, 1985); Che-ming Yang, M.D. (Miami, 1986); Richard Yevak, M.D. (Temple, 1986).

Family Medicine

Chief Resident: Suzanne Johannet, M.D. (Harvard, 1984).

Residents: Samuel D. Blackwell, M.D. (Florida, 1987); W. Kevin Broyles, M.D. (Florida, 1986); Joseph W. Bruckert, M.D. (Dusseldorf, Germany, 1982); Sarah B. Cornwell, M.D. (Duke, 1985); Sandra A. Cromo, M.D. (Jefferson, 1987); A. Mark Durand, M.D. (Vanderbilt, 1982); Darlene S. Eldredge, M.D. (New York at Buffalo, 1985); Robert L. Ferrer, M.D. (Hahnemann, 1986); Michael P. Flanagan, M.D. (Maryland, 1987); Elizabeth S. Grace, M.D. (New York at Syracuse, 1987); Mary Lisa Gunning, M.D. (Jefferson, 1985); Janet L. Hader, M.D. (Missouri, 1987); Theodor T. Herwig, M.D. (Cincinnati, 1987); Craig A. Hoffmeier, M.D. (Louisiana, 1986); Richard G. Juberg, M.D. (East Carolina, 1982); William Jurgelsky, M.D. (Duke, 1967); Victoria S. Kaprielian, M.D. (California at Los Angeles, 1985); Eugenie M. Komives, M.D. (Harvard, 1985); Steven M. Lackey, M.D. (Missouri, 1984); Thomas E. Lynn, M.D. (Georgetown, 1987); Ann C. Marty, M.D. (Missouri, 1984); Miki B. Moy, M.D. (Pennsylvania, 1987); Maureen E. Murphy, M.D. (Kansas, 1985); Jane H. Murray, M.D. (North Carolina at Chapel Hill, 1984); Karen L. Musolf, M.D. (Wisconsin, 1985); Elisabeth B. Nadler, M.D. (New York Univ., 1985); Susan B. Parkerson, M.D. (New York at Stony Brook, 1985); Ronald A. Pollack, M.D. (Med. Coll. of Virginia, 1986); Diane C. Roden, M.D. (Missouri, 1987); Charles A. Ross, M.D. (North Carolina at Chapel Hill, 1987); John R. Sellett, M.D. (Southern Illinois, 1987); Daniel J. Shamburek, M.D. (Med. Coll. of Virginia, 1986); Loretta G. Sutphin, M.D. (Duke, 1986); Mark W. Woodruff, M.D. (Tufts, 1985); Kimberly S. Yarnall, M.D. (Florida, 1985).

Fellows: Jessie A. Junker, M.D. (Wisconsin, 1984); David K. McFarland, M.D. (Washington, 1984); Timothy R. Oman, M.D. (Virginia, 1981).

Medicine

Chief Residents: Scott R. Brazer, M.D. (Case Western Reserve, 1981); Christopher M. O'Connor, M.D. (Maryland, 1983).

Senior Assistant Residents: Roslyn J. Bernstein, M.D. (Duke, 1985); Povel H. Brown, M.D. (New York Univ., 1985); Paul T. Campbell, M.D. (Temple, 1985); Carol S. Dukes, M.D. (Utah, 1985); James G. Ebeling, M.D. (Duke, 1985); Philip N. Effron, M.D. (Johns Hopkins, 1985); Pang-Yen Fan, M.D. (Boston, 1985); Ruth A. Greenfield, M.D. (Duke, 1985); Mark D. Hannis, M.D. (Tennessee, 1985); Victor W. Hsu, M.D. (Yale, 1985); Michael J. Kelley, M.D. (Michigan, 1985); Richard T. Kenney, M.D. (Harvard, 1985); Robert J. Kreitman, M.D. (Ohio State, 1985); Joel M. Kupfer, M.D. (Mount Sinai, 1985); Peter S. Kussin, M.D. (Mount Sinai, 1985); Michael B. Lambert, M.D. (Oklahoma, 1985); James K. Lanz, M.D. (Pittsburgh, 1985); David R. Lichtenstein, M.D. (Pennsylvania, 1985); Michael S. Manning, M.D. (Alabama, 1985); Susan Manzi, M.D. (Pittsburgh, 1985); Michael J. Miller, M.D. (Pittsburgh, 1985); Doris S. Mugrditchian, M.D. (Washington, 1985); Eugene A. Oddone, M.D. (Colorado, 1985); Thomas L. Ortel, M.D. (Indiana, 1985); Elise H. Pyun, M.D. (Boston, 1985); Fraser M. Richards, M.D. (Minnesota, 1980); Michael L. Russell, M.D. (North Carolina at Chapel Hill, 1985); Stephen R. Smith, M.D. (Duke, 1985); Robert A. Sorrentino, M.D. (Albany, 1985); Paul W. Sperduto, M.D. (Duke, 1984); Loyal G. Tillotson, M.D. (Harvard, 1985); Rosanne R. Travelute, M.D. (Kansas, 1985); Debasish Tripathy, M.D. (Duke, 1985); Mercedes S. Villanueva, M.D. (Washington Univ., 1985); David C. Whitcomb, M.D. (Ohio, 1985); Jeffrey G. Wong, M.D. (Utah, 1985); Sherrie E. Zweig, M.D. (North Carolina at Chapel Hill, 1985).

Junior Assistant Residents: Kim G. Abson, M.D. (Washington State, 1986); Harry R. Aldrich, M.D. (Duke, 1986); Polly A. Beere, M.D. (Chicago, 1986); Michael S. Berkoben, M.D. (Pennsylvania, 1986); Carl A. Blau, M.D. (Ohio State, 1986); Stephen P. Caminiti, M.D. (New York Univ., 1986); David E. Chambers, M.D. (South Alabama,

1986); Ian Christoph, M.D. (Washington Univ., 1986); Douglas L. Cotsamire, M.D. (Ohio State, 1986); Raymond S. Cuevo, M.D. (Yale, 1986); Stephen C. Culp, M.D. (Vermont, 1986); Gary K. DeWeese, M.D. (Duke, 1986); Leslie J. Domalik, M.D. (Pittsburgh, 1986); Daniel D. Dulas, M.D. (Minnesota, 1986); Kenneth A. Fath, M.D. (Ohio State, 1986); Julie K. Fetters, M.D. (Ohio State, 1986); Terry L. Forrest, M.D. (Indiana Univ., 1986); Lawrence K. Gates, M.D. (Duke, 1986); Lisa A. Giannetto, M.D. (Loyola Stritch, 1986); Steven A. Guarisco, M.D. (Louisiana, 1986); Paul G. Harvill, M.D. (Duke, 1986); James G. Jollis, M.D. (Ohio State, 1986); John A. Kallianos, M.D. (Duke, 1986); Shelia A. Kim, M.D. (Pittsburgh, 1986); Daniel W. Koenig, M.D. (Duke, 1986); Sarah S. Kratz, M.D. (North Carolina at Chapel Hill, 1984); Arnold Louie, M.D. (Albany Med. Coll., 1986); James M. McGill, M.D. (Ohio State, 1986); Robert A. Muggia, M.D. (Tufts, 1986); Carolyn M. Mulroney, M.D. (Johns Hopkins, 1986); Alexander Paraschos, M.D. (Med. Coll. of Virginia, 1986); Robert C. Pennington, M.D. (North Carolina at Chapel Hill, 1986); Andrew W. Pippas, M.D. (Utah, 1986); Robert E. Pryor, M.D. (Baylor, 1986); Jonathan A. Schleimer, M.D. (Johns Hopkins, 1986); Steven G. Simonson, M.D. (Med. Coll. of Pennsylvania, 1986); Nicholas D. Snow, M.D. (Ohio State, 1985); Bryan L. Stone, M.D. (Utah, 1986); Jeremy Sugerman, M.D. (Duke, 1986); Keith R. Superdock, M.D. (Jefferson, 1986); Paul R. Vom Eigen, M.D. (Vermont, 1986); John W. Wassenaar, M.D. (Florida, 1985); Karen E. Welty-Wolf, M.D. (Duke, 1986); Robert A. Wolff, M.D. (Albany, 1986); Darryl C. Zeldin, M.D. (Indiana Univ., 1986); William J. Zimmer, M.D. (Med. Coll. of Wisconsin, 1986).

Interns: Lee F. Allen, M.D. (New Jersey, 1987); Lori A. Bastian, M.D. (Emory, 1987); Gerold Beppler, M.D. (Philipps Univ., Germany, 1983); Charles A. Brooks, M.D. (Washington Univ., 1987); David W. Butterly, M.D. (Duke, 1987); Kwan-Sian Chen, M.D. (National Taiwan Univ., 1982); Ronald E. Cirullo, M.D. (California at Irvine, 1987); Jack E. Cokler, M.D. (Loyola, 1987); Richard L. Converse, M.D. (Johns Hopkins, 1987); Randolph A. Cooper, M.D. (Duke, 1987); Kathleen D. Couling, M.D. (Ohio State, 1987); Tina D. Covington, M.D. (Howard, 1987); Sharon R. Cumbee, M.D. (Duke, 1987); A. Gregory Deam, M.D. (Ohio State, 1987); David D. Deatkine, M.D. (Southwestern, 1987); Joerg F. Debatin, M.D. (Heidelberg, Germany, 1987); J. Michael DiMaio, M.D. (Miami, 1987); Dennis C. Dobyan, M.D. (Texas at Galveston, 1987); Jonathan C. Fox, M.D. (Chicago, 1987); Steve N. Georas, M.D. (Brown, 1987); Holli A. Hamilton, M.D. (New York Univ., 1987); William L. Haynes, M.D. (Duke, 1987); Douglas L. Hill, M.D. (Vanderbilt, 1987); H. Scott Howell, M.D. (Ohio State, 1987); Andrew J. Kaplan, M.D. (Southwestern, 1987); Eugene C. Kovalik, M.D. (McGill, 1987); Jeffrey F. Lipton, M.D. (Jefferson, 1987); David F. Lobach, M.D. (Duke, 1987); Gustav C. Magrinat, M.D. (North Carolina at Chapel Hill, 1987); Diane M. Metzler, M.D. (Minnesota, 1987); Paul L. Mulhausen, M.D. (Minnesota, 1987); L. Kristin Newby, M.D. (Indiana, 1987); Jane E. Onken, M.D. (George Washington, 1987); Leslie J. Parent, M.D. (Duke, 1987); Jonathan L. Riegler, M.D. (Michigan, 1987); Spencer I. Rozin, M.D. (Oklahoma, 1987); Gordon D. Rubenfeld, M.D. (Jefferson, 1987); Aneysa C. Sane, M.D. (Duke, 1987); James K. Schwarz, M.D. (Duke, 1987); Kathryn Schwarzenberger, M.D. (Texas at Galveston, 1987); Daniel P. Seward, M.D. (Wayne State, 1987); Ala I. Shararah, M.D. (American Univ. of Beirut, 1987); Steve L. Shilling, M.D. (Southwestern, 1987); Lynn M. Shimabukuro, M.D. (Eastern Virginia, 1982); Edward F. Terrien, M.D. (Vermont, 1987); Dennis M. Unks, M.D. (Pittsburgh, 1987); Dennis M. Walling, M.D. (Johns Hopkins, 1987); Ilene D. Weintraub, M.D. (Pittsburgh, 1987); Wynne E. Wood-year, M.D. (West Virginia, 1987); Daniel A. Yohay, M.D. (Duke, 1987).

Fellows: Michael J. Barber, M.D. (Indiana, 1984); William W. Barrington, M.D. (Ohio State, 1983); Robert P. Bauman, M.D. (Wayne State, 1977); Camille L. Bedrosian, M.D. (Harvard, 1983); William L. Bell, M.D. (Bowman Gray, 1977); James R. Bengton, M.D. (George Washington, 1983); Jonathan J. Berry, M.D. (Pennsylvania, 1983); Dale L. Blazey, M.D. (Duke, 1982); David S. Borislow, M.D. (Johns Hopkins, 1983); Stephen J. Brandt, M.D. (Emory, 1981); Steven D. Brown, M.D. (Texas, 1983); Miriam L. Cameron, M.D. (Bowman Gray, 1984); Jose A. Canedo, M.D. (Univ. of Autonoma de Guadalajara, 1976); Peter W. Carter, M.D. (Tennessee, 1983); J. Peter Cegielski, M.D. (California at San Diego, 1984); David M. Chalikian, M.D. (Pennsylvania, 1984); Nelson T. Chao, M.D. (Far Eastern Univ., 1982); Peng-Shen Chen, M.D. (National Taiwan, 1979); Ambrose A-P Chiang, M.D. (Taipei Medical College, 1981); John Lai C. Ch'ng, M.D. (Singapore, 1977); Peter R. H. Clarke, M.D. (Michigan, 1983); Deirdre M. Collins, M.D. (Thomas Jefferson, 1984); Paul R. Conkling, M.D. (Ohio State, 1982); Michael R. Cooper, M.D. (Duke, 1983); John B. Cox, M.D. (George Washington, 1983); Larry D. Cripe, M.D. (Rush, 1984); James P. Daubert, M.D. (Thomas Jefferson, 1984); Charles J. Davidson, M.D. (Connecticut, 1982); Brett C. Davis, M.D. (Arkansas, 1984); Margaret A. Deutsch, M.D. (Wisconsin, 1984); Philip Dien, M.D. (Dartmouth, 1981); Scott M. Dinehart, M.D. (Texas, 1983); Michael J. Econs, M.D. (California at San Francisco, 1983); David M. Ellison, M.D. (Duke, 1984); Glen D. Gafford, M.D. (Tennessee, 1978); Gary S. Gilkeson, M.D. (Southwestern, 1979); F. Roosevelt Gillingham, M.D. (Duke, 1981); Bruce J. Gould, M.D. (Jefferson, 1983); Jack A. Griebel, M.D. (Arkansas, 1983); Andrea Hackel, M.D. (Duke, 1981); Joseph B. Hawkins, M.D. (South Alabama, 1982); Maurice E. Heard, M.D. (North Carolina at Chapel Hill, 1984); Andrew A. Hertler, M.D. (Michigan, 1982); Steven I. Himmelstein, M.D. (Tennessee, 1982); Michael B. Honan, M.D. (Alabama, 1983); Jodie L. Hurwitz, M.D. (Albert Einstein, 1981); Christopher W. Ingram, M.D. (Bowman Gray, 1983); James M. Irwin, M.D. (Hershey, 1982); Thomas W. Jackson, M.D. (Med. Coll. of Georgia, 1982); Jan A. Janson, M.D. (New York Univ., 1984); Donald A. Jurivich, D.O. (Chicago Coll. of Osteopathic Medicine, 1982); Peter A. Kaufman, M.D. (New York Univ., 1983); W. Ransom Kilgore, M.D. (Oklahoma, 1984); Jerome H. Kim, M.D. (Yale, 1984); M. Sue Kirkman, M.D. (North Carolina at Chapel Hill, 1982); Delane W. Kitzman, M.D. (Johns Hopkins, 1984); Harold G. Koenig, M.D. (California at San Francisco, 1982); Arthur A. Kort, M.D. (New York Univ., 1978); Virginia B. Kraus, M.D. (Duke, 1982); William E. Kraus, M.D. (Duke, 1982); William D. Kuehl, M.D. (Iowa, 1983); Kevin Lee-See, M.D. (Univ. of Queensland, 1976); Mark E. Leite, M.D. (Ohio State, 1984); J. Peter Longabaugh, M.D. (Pittsburgh, 1982); Peter J. Mannon, M.D. (Boston, 1983); Meda E. McCarley, M.D. (Duke, 1982); Diana B. McNeill, M.D. (Duke, 1982); Roderick B. Meese, M.D. (Cincinnati, 1981); John P. Middleton, M.D. (Virginia, 1983); David R. Mitchell, M.D. (Pittsburgh, 1984); Randall W. Moreadith, M.D. (Duke, 1984); Joseph S. Moss, M.D. (Ohio State, 1984); J. Brent Muhlestein,

M.D. (Utah, 1984); Frank I. Navetta, M.D. (New York Med. Coll., 1984); Nicholas J. Nickl, M.D. (Tennessee, 1982); Lina-Marie Obeid, M.D. (American Univ. of Beirut, 1983); E. Magnus Ohman, M.D. (St. Lawrence Hospital, 1981); James J. Onorato, M.D. (Case Western Reserve, 1984); Richard L. Page, M.D. (Duke, 1984); Timothy J. Panella, M.D. (Tennessee, 1983); William J. Parsons, M.D. (Dartmouth, 1980); Jose A. Perez, M.D. (Southwestern, 1982); George B. Pierson, M.D. (Kansas, 1981); Kevin R. Porter, M.D. (Duke, 1983); Peter Quigley, M.D. (Trinity, 1976); John R. Raymond, M.D. (Ohio State, 1982); Kenneth B. Roberts, M.D. (Duke, 1984); Maureen Ross, M.D. (Miami, 1984); Michael R. Saitta, M.D. (Johns Hopkins, 1984); David C. Sane, M.D. (Duke, 1983); Ralph M. Schapira, M.D. (Southwestern, 1984); Kenneth E. Schmader, M.D. (Bowman Gray, 1980); Frederic D. Seifer, M.D. (Northwestern, 1982); Khalid Sheikh, M.D. (Florida, 1981); Win K. Shen, M.D. (New York Med. Coll., 1983); William J. Shergy, M.D. (Hahnemann, 1982); Jeffrey E. Shogan, M.D. (Pittsburgh, 1982); Michael H. Sketch, M.D. (Creighton, 1984); Jack E. Smith, M.D. (Hahnemann, 1984); Richard S. Sprague, M.D. (Vermont, 1983); Robert F. Spurney, M.D. (Ohio, 1983); Hal T. Stoneking, M.D. (Kentucky, 1983); Alan C. Street, M.D. (Univ. of Melbourne, 1980); Andrew S. Tang, M.D. (Univ. of Toronto, 1977); James E. Tcheng, M.D. (Johns Hopkins, 1982); Brian M. Tedman, M.D. (Nottingham, 1979); Anne Toohey, M.D. (Nebraska, 1977); Thomas F. Trahey, M.D. (Bowman Gray, 1984); Thaddeus Walczak, M.D. (Northwestern, 1982); Thomas C. Wall, M.D. (Bowman Gray, 1982); Michael M. Ward, M.D. (Illinois, 1983); Franklin C. Wefald, M.D. (Johns Hopkins, 1985); Debra K. Weiner, M.D. (Missouri, 1983); Henry L. Weiner, M.D. (Yale, 1983); Matthew J. Weiss, D.O. (Michigan State Coll. of Osteopathic Med., 1979); Eric P. Winer, M.D. (Yale, 1983).

DIVISION OF DERMATOLOGY

Lisa A. Beck, M.D. (New York at Stony Brook, 1985); Fredric Blum, M.D. (New York Univ., 1985); Robert E. Clark, M.D. (Southwestern, 1985); Ira C. Davis, M.D. (New York Univ., 1986); David L. Kaplan, M.D. (Bowman Gray, 1981); Mark Koone, M.D. (Baylor, 1986); Cynthia L. Reitz, M.D. (Louisiana, 1985); Hazel J. Vernon, M.D. (Washington Univ., 1983); David I. Wolf, M.D. (California at San Francisco, 1981).

DIVISION OF NEUROLOGY

James R. Burke, M.D. (New York-Downstate, 1985); J. Thaddeus Coin, M.D. (Duke, 1984); Kenneth W. Holmes, M.D. (Chicago, 1984); Peter King, M.D. (Duke, 1985); Dennis L. Kolson, M.D. (Pittsburgh, 1985); Eun-Kyu Lee, M.D. (Maryland, 1986); Lorraine J. Loprst, M.D. (Thomas Jefferson, 1986); Joel C. Morgenlander, M.D. (Pittsburgh, 1986); Steven S. Rosenfeld, M.D. (Northwestern, 1985); Richard W. Tim, M.D. (California at San Diego, 1986); Jeffrey M. Vance, M.D. (Duke, 1984); Sanjay Yadav, M.D. (Virginia, 1983).

Obstetrics and Gynecology

Chief Residents: Mary Lee Howell, M.D. (Vanderbilt, 1984); Bradley Hurst, M.D. (Texas at Houston, 1984); Bruce Lessey, M.D., Ph.D. (Colorado, 1984); Paul Marshburn, M.D. (Emory, 1984); George Olt, M.D. (Cincinnati, 1984); Elizabeth Raymond, M.D. (Columbia, 1984).

Assistant Residents: James Alexander, M.D., Ph.D. (Southern Illinois University, 1987); James Allen, M.D. (Rutgers, 1982); Deborah Bart, M.D. (Univ. of Iowa, 1987); Jodell Boyle, M.D. (Duke, 1987); William Cliby, M.D. (Univ. of Vermont, 1987); Grace Couchman, M.D. (Colorado, 1985); Margaret Dahmus, M.D. (Pennsylvania State, 1982); Gerianne Geszler, M.D. (Duke, 1985); Lydia Jeffries, M.D. (Iowa, 1986); Susan Jenkins, M.D. (Duke, 1985); Kathryn Lohr, M.D. (Kentucky, 1986); L. Stewart Massad, M.D. (Duke, 1984); Carla Morgan, M.D. (East Carolina, 1987); Kathy Santoriello, M.D. (Duke, 1984); Michael Stellar, M.D. (Temple, 1986); Carolyn Wilson, M.D. (Med. Coll. of Virginia, 1987).

Ophthalmology

Chief Residents on rotating basis.

Residents: Adam J. Altman, M.D. (Massachusetts, 1985); John Crittenden, M.D. (South Alabama, 1985); Cynthia Hampton, M.D. (Texas at Houston, 1985); Ann Joslyn, M.D. (Duke, 1984); Lee A. Klombers, M.D. (Pittsburgh, 1986); John F. Murchison, M.D. (Tennessee, 1986); Richard Reichert, M.D. (Florida, 1985); Steven Shields, M.D. (Mississippi, 1984); Jeffery Slott, M.D. (McGill Univ., 1985); Kent Small, M.D. (Duke, 1981); Frederick S. Sutherland, M.D. (Duke, 1986); Michael T. Vu, M.D. (Duke, 1984); Robert E. Wiggins, M.D. (North Carolina at Chapel Hill, 1982); Martha C. Wilson, M.D. (Louisville, 1986); Jeffrey J. Zuravleff, M.D. (Pittsburgh, 1986).

Pathology

Residents: Sebastian Alston, M.D. (North Carolina at Chapel Hill, 1985); Susan Beck-Davis, M.D. (Duke, 1984); Timothy Benning, M.D. (Rochester, 1985); Peter F. Bernhardt, M.D. (Duke, 1986); Osbert Blow, M.D. (Duke, 1987); David R. Bolick, M.D. (Duke, 1986); Thomas B. Clark III, M.D. (South Carolina, 1983); Dewey L. Dean, M.D. (Med. Univ. of South Carolina, 1986); Craig E. Elson, M.D. (Michigan, 1983); Roy F. Frye, M.D., Ph.D. (Michigan, 1985); Gregory N. Fuller, M.D. (Baylor, 1987), Ph.D. (Texas, 1983); Arlene Herzberg, M.D. (George Washington, 1986); Frank Honkanen, M.D. (Med. Coll. of Georgia, 1986); Christine Hulette, M.D. (Louisville,

1983); Peter Humphrey, M.D., Ph.D. (Kansas, 1983); Jon Lomasney, M.D. (Johns Hopkins, 1982); Marsha Lucas, M.D. Ph.D. (Duke, 1984); Shrin Rajagopalan, M.D. (Duke, 1987), Ph.D. (Duke, 1986); Mark W. Scroggs, M.D. (Duke, 1984); Anne Marie Vandersteenhoven, M.D. (Med. Univ. of South Carolina, 1987), Ph.D. (Med. Univ. of South Carolina, 1982); Jay Vandersteenhoven, M.D. (Med. Univ. of South Carolina, 1987), Ph.D. (Med. Univ. of South Carolina, 1983); William Vick, M.D. (Duke, 1987); Kay Washington, M.D. (North Carolina at Chapel Hill, 1986); Helmut K. Wolf, M.D. (Univ. of Mainz School of Medicine, 1985).

Fellows: Susan Atwater-Boyd, M.D. (Duke, 1985); Rex C. Bentley, M.D. (Harvard, 1986); Robert Kinney, M.D. (Duke, 1981); Phillip Ruiz, Jr., M.D. (George Washington, 1985), Ph.D. (Florida, 1984).

Pediatrics

Chief Resident: Robert Drucker, M.D. (Duke, 1979).

Third Year Residents: Athos Bousvaros, M.D. (Duke, 1985); Barbara Deuell, M.D. (New York at Buffalo, 1985); Ira Dunkel, M.D. (Duke, 1985); Kimberly Dunsmore, M.D. (Wisconsin, 1985); Dorothy Eisenberg, M.D. (Duke, 1985); Richard England, M.D. (Indiana, 1985); Karen Farizo, M.D. (Louisiana, 1985); Ramsay Fuleihan, M.D. (Amer. Univ. of Beirut, 1985); D. Eglia Rabinovich, M.D. (Southern Illinois, 1985); Monica Shelton, M.D. (North Carolina at Chapel Hill, 1984); Tanya Trippett, M.D. (Duke, Katherine Turlington, M.D. (South Florida, 1984).

Second Year Residents: Ghassan Dbaibo, M.D. (American Univ. Beirut, 1986); Jennifer Ferrer, M.D. (Med. Coll. of Pennsylvania, 1986); Julie Fishbein, M.D. (Maryland, 1985); Karen Frush, M.D. (Duke, 1986); Sandra Hosford, M.D. (Duke, 1986); John Kallianos, M.D. (Duke, 1985); Jan Koppelman, M.D. (Maryland, 1986); Joan Meek, M.D. (Kentucky, 1986); Robert Pennington, M.D. (North Carolina at Chapel Hill, 1986); Jane Scott, M.D. (Colorado, 1986); Jana Stockwell, M.D. (Southwestern at Dallas, 1986); Jana Stockwell, M.D. (Southwestern, 1986); Michael Vance, M.D. (Rochester, 1986); Dawn Vidacovich, M.D. (Baylor, 1986); Heinrich Werner, M.D. (Mainz, West Germany, 1986).

First Year Residents: Jonathan Becker, M.D. (Washington, 1987); Susan Blank, M.D. (Pittsburgh, 1987); Paul Cheng, M.D. (National Taiwan Univ., 1979), Ph.D. (Pennsylvania, 1985); Jack Colker, M.D. (Loyola, 1987); Mary Glasheen, M.D. (New York at Stoneybrook, 1987); Anna Lawson, M.D. (Ohio State, 1987); Yisheng Lee, M.D. (National Taiwan Univ., 1981); Leslie Lehmann, M.D. (Duke, 1985); Catherine McHugh, M.D. (New York at Stoneybrook, 1987); Jihad Obeid, M.D. (Amer. Univ., Beirut, 1987); Ziad Saba, M.D. (Amer. Univ., Beirut, 1987); Daniel Seward, M.D. (Wayne State, 1987); Lynn Shimabukuro, M.D. (Eastern Virginia, 1982); Bryan Stone, M.D. (Utah, 1986); Maria Valdes, M.D. (Dartmouth, 1987).

Fellows: Michael Barrett, M.D. (Oregon, 1979); Janet Claassen, M.D. (Wisconsin, 1983); Dennis Clements, M.D. (Rochester, 1973); James Cook, M.D. (Jefferson, 1984); Jia-Huan Ding, M.D. (Henan Med. Coll., China, 1968); William L. Ebberling, M.D. (Bowman Gray, 1974); Alan Gaines, M.D. (Columbia, 1983); Ricki Goldstein, M.D. (Cornell, 1981); May Griebel, M.D. (Arkansas, 1982); Mark Heulitt, M.D. (Far Eastern Univ., Philippines, 1982); John Holtkamp, M.D. (New York Univ., 1980); Kimberly Iafolla, M.D. (Pittsburgh, 1984); Fumio Inoue, M.D. (Kyoto Prefectural, Japan, 1977); Verena Jorgensen, M.D. (Duke, 1981); Edward Kent, M.D. (Pittsburgh, 1983); Gregory Kirkpatrick, M.D. (Oklahoma, 1984); Darryl Longee, M.D. (Arkansas, 1983); Donald Ludlow, M.D. (Hahnemann, 1983); Marc Majure, M.D. (Mississippi, 1981); Mark Moncino, M.D. (Loyola, 1984); Salman Mroueh, M.D. (American Univ. of Beirut, 1982); Bennett Pearce, M.D. (Louisiana, 1983); Katherine Pihoker, M.D. (Jefferson, 1984); Joseph Roberts, M.D. (Emory, 1981); Karen Raines, M.D. (Bowman Gray, 1984); Laura Schanberg, M.D. (Duke, 1984); Kathleen Sheerin, M.D. (Duke, 1983); Lynn Sheets, M.D. (Kansas, 1983); John Simpson, M.D. (South Carolina, 1984); Jeffrey Snedeker, M.D. (Wisconsin, 1982); Karen St. Claire, M.D. (Texas at Galveston, 1982); Herbert Stern, M.D. (South Carolina, 1984); Kim Stine, M.D. (Kansas, 1982); Kathryn Thrailkill, M.D. (Ohio State, 1983); V. Vedanarayanan, M.D. (Jawaharlal Inst. Post-Grad. Med. Ed., India, 1978); Chip Walter, M.D. (Maryland, 1983); Russell Ware, M.D. (Duke, 1983); Keith M. Weiner, M.D. (Ohio State, 1983).

Psychiatry

Chief Residents: James Anderson, M.D. (Oral Roberts, 1984); Marc Feldman, M.D. (Dartmouth, 1984); Stephen Ford, M.D. (East Tennessee, 1984); Vaughn McCall, M.D. (Duke, 1984); William McDonald, M.D. (Duke, 1984).

Residents: David Bierman, M.D. (Southern Illinois, 1985); Antonia Bogyi, M.D. (Michigan, 1986); Joseph Bona, M.D. (SUNY Buffalo, 1986); Basilia Bordador, M.D. (Manila, Philippines, 1965); Mark Burns, M.D. (Southwestern, 1987); Joseph Burt, M.D. (Michigan, 1983); Jeffrey Chambers, M.D. (Michigan, 1986); Terry Clarke, M.D. (Case Western Reserve, 1985); Jan Neal Cools, M.D. (Duke, 1982); Lou Ann Crume, M.D. (Kentucky, 1986); Martha Davidson, M.D. (Virginia, 1985); Kenneth DiNella, M.D. (Alabama, 1987); Marc-Andre Domken, M.D. (Catholic Univ. of Louvain, 1982); Carole Dunmire, M.D. (Rush, 1985); Lawrence Dunn, M.D. (Michigan, 1984); Gary Figiel, M.D. (St. Louis, 1985); Douglas Gartrell, M.D. (Duke, 1987); Veerinder Goli, M.D. (Osmania Med. Coll., 1987); Kathryn Gray, M.D. (Indiana, 1984); Samuel Green, M.D. (Albany, 1987); Grant Halischuk, M.D. (McGill, 1983); Caroline Haynes, M.D. (Duke, 1983); Philip Hillsman, M.D. (Tennessee, 1987); Graham Hoffman, M.D. (Case Western Reserve, 1983); Kim Hoover, M.D. (Connecticut, 1983); Randall Johnson, M.D. (South Carolina, 1983); Lakshmi Kamaraju, M.D. (Andhra Med. Coll., India, 1976); John Kasckow, M.D. (Rochester, 1987); Jillian Kleiner, M.D. (Duke, 1986); Brian Koller, M.D. (Minnesota, 1986); Andrew Krystal, M.D. (Duke, 1987); Lee Larcade, M.D. (Oklahoma, 1985); LuAnn Leidy, M.D. (Connecticut, 1987); Scott Lurie, M.D. (Duke,

1987); Elinore McCance, M.D. (Connecticut, 1987); Sheheda Maroof, M.D. (Gandhi Med. Coll., India, 1978); Gabrielle Marshall, M.D. (New York Med. Coll., 1983); James McGough, M.D. (Duke, 1986); Paul Merenbloom, M.D. (Louisville, 1982); Eric Moffet, M.D. (Virginia, 1986); Louis Monty, M.D. (Sackler School of Med., Israel, 1985); Rex Moody, M.D. (UNC-Chapel Hill, 1987); Magdalena Raczkowska Naylor, M.D., Ph.D. (Warsaw Univ., 1976); Leann Nelson, M.D. (Texas-Houston, 1986); Thomas Owens, M.D. (Louisiana, 1985); Ioanis Parashos, M.D. (Thessaloniki, Greece, 1983); James Parker, M.D. (Alabama, 1985); Larry Pastor, M.D. (Jefferson, 1984); Elizabeth Pekarek, M.D. (Kentucky, 1986); James Pryor, M.D. (South Carolina, 1985); Patricia Rea, M.D. (Cincinnati, 1987); Emanuel Rosen, M.D. (Mt. Sinai, 1987); Deborah Ross, M.D. (Minnesota, 1987); Kathleen Seibel, M.D. (Minnesota, 1985); Frank Shelp, M.D. (Virginia, 1984); Daniel Shreeve, M.D. (California-San Diego, 1984); Margaret Shugart, M.D. (Virginia, 1984); Philip Spiro, M.D. (Yale, 1983); Nancy Stebbins, M.D. (Texas-Houston, 1987); Sean Stetson, M.D. (UMDNJ-RW Johnson Medical School, 1987); Ranota Thomas, M.D. (East Tennessee, 1987); Deborah Thurber, M.D., (Louisiana-Shreveport, 1985); Mark Webb, M.D. (Tulane, 1986); Terry Yuschok, M.D. (Northwestern, 1986).

Radiology

Residents: Frank Berkowitz, M.D. (New York, 1983); Charles Brooks, M.D. (Washington Univ., 1987); Linda Brown, M.D. (California at San Diego, 1984); W. Kent Davis, M.D. (North Carolina at Chapel Hill, 1984); Cheryl Davison, M.D. (Michigan State, 1986); Bruce Distell, M.D. (Pennsylvania, 1986); John Donnal, M.D. (Virginia, 1983); Diane Edge, M.D. (Dartmouth, 1982); Gonzalo Fernandez, M.D. (Bowman Gray, 1985); Mark Finkel, M.D. (Albert Einstein, 1983); David Forsberg, M.D. (Duke, 1986); Donald Frush, M.D. (Duke, 1985); R. Westwood Fuller, M.D. (Med. Coll. of Virginia, 1986); Janet Garrett, M.D. (Cornell, 1983); Daniel Green, M.D. (Vanderbilt, 1981); Thomas Grist, M.D. (Med. Coll. of Wisconsin, 1985); Margaret Hansen, M.D. (California at Los Angeles, 1985); Michael Hertzberg, M.D. (North Carolina at Chapel Hill, 1984); Diana Hull, M.D. (Albert Einstein, 1985); Peter Janick, M.D. (Duke, 1982); Carlton Jenkins, M.D. (North Carolina at Chapel Hill, 1983); Sheryl Jordan, M.D. (North Carolina at Chapel Hill, 1985); Susan Kleeman, M.D. (Yale, 1960); Mark Kliever, M.D. (Duke, 1985); Samuel Kneee, M.D. (Vanderbilt, 1985); Andrew Ku, M.D. (Columbia, 1984); Robert Lavey, M.D. (Stanford, 1984); Laurie McAdams Lomasney, M.D. (Cincinnati, 1986); Charles McDonnell, M.D. (Johns Hopkins, 1986); Philip Marino, M.D. (Duke, 1983); Michael Murray, M.D. (Duke, 1985); Ronald Newbold, M.D. (Utah, 1984); Marilyn Roubidoux, M.D. (Utah, 1984); D. Eugene Sallee, M.D. (Kansas City, 1985); Michael Shanks, M.D. (Michigan, 1983); Robert Sherrier, M.D. (Duke, 1985); Mary Swain, M.D. (Duke, 1984); John Thompson, M.D. (Duke, 1984); John Uglietta, M.D. (Duke, 1985); Connie Vail, M.D. (Utah, 1984); Jennifer Van Vickle, M.D. (Duke, 1986); Harlan Vingan, M.D. (New York, Down State, 1983); L. Patrick Warren, M.D. (North Carolina at Chapel Hill, 1976); Vance Watson, M.D. (Maryland, 1986); Helen Weist, M.D. (South Carolina, 1984); Keith White, M.D. (Utah, 1985); Winston Whitney, M.D. (Duke, 1986); M. David Wiener, M.D. (New York, 1984); John Wrench, M.D. (California at San Diego, 1985).

Surgery

DIVISIONS OF GENERAL AND CARDIO-THORACIC SURGERY

Instructors and Teaching Scholars: Thomas B. Ferguson, M.D. (St. Louis, 1979); Richard D. Floyd, M.D. (Duke, 1978); George S. Tyson, Jr., M.D. (Duke, 1977).

Instructors and Chief Residents: Ralph J. Damiano, M.D. (Duke, 1980); James M. Douglas, Jr., M.D. (Duke, 1978); Donald Glover, M.D. (Johns Hopkins, 1980); John F. Lucas III, M.D. (Duke, 1981); Richard J. Peterson, M.D. (Mayo, 1979).

Research Fellows: Frederick W. Clevenger, M.D. (Florida, 1982); Giovanni Cucchiari, M.D. (Univ. of Milan, Italy, 1983); Keith S. Cross, M.D. (Trinity College, Dublin, 1981); Robert D. Davis, M.D. (California at Los Angeles, 1984); Joseph R. Elbeery, M.D. (Georgetown, 1985); Mostafa N. El-Sanadiki, M.B., B.Ch. (Assiut Univ., Egypt, 1979); Gregory P. Fontana, M.D. (California at Los Angeles, 1984); Scott A. Hanan, M.D. (Oklahoma, 1984); Robert C. Harland, M.D. (Duke, 1983); David H. Harpole, M.D. (Virginia, 1984); Mark Hickey, M.B., B.Ch. (National Univ. of Ireland, 1976); Kamal M. F. Itani, M.D. (American Univ. of Beirut, 1985); Michael E. Jessen, M.D. (Univ. of Manitoba, 1981); J. Scott Kabas, M.D. (Duke, 1985); George I. Mansour, M.D. (Ain Shams Univ. Coll. of Medicine, Egypt, 1984); Yuzuru Matsuyama, M.D. (Nippon Medical School, Japan, 1975); Manolis T. Niotis, M.D. (Univ. of Thessaloniki, Greece, 1972); Zeljko Radic, M.D. (School of Medicine, Belgrade, Yugoslavia, 1978); Michael A. Skinner, M.D. (Rush, 1984); Craig L. Slingsluff, Jr., M.D. (Virginia, 1984); Gert E. Tuchy, M.D. (Univ. of Vienna, Austria, 1986); Douglas S. Tyler, M.D. (Dartmouth, 1985); Yasuo Yamaguchi, M.D. (Univ. of Kumamoto, Japan, 1976); Ph.D. (Univ. of Kumamoto, Japan, 1985).

Senior Assistant Residents: Bert A. Bowers, M.D. (Iowa, 1982); Thomas D. Christopher, (Duke, 1982); Robin G. Cummings, M.D. (Duke, 1982); Stuart J. Knechtle, M.D. (Cornell, 1982); S. Chace Lottich, M.D. (Duke, 1981); H. Kim Lylerly, M.D. (California, 1983); David M. Mahvi, M.D. (South Carolina, 1981); George W. Maier, M.D. (Duke, 1982); Raymond G. Makhoul, M.D. (Chicago, 1982); James J. Morris, M.D. (Duke, 1981); Charles E. Murphy, M.D. (Duke, 1982); Francis S. Rotolo, M.D. (Michigan, 1981); John A. Spratt, M.D. (Washington Univ., 1980); Christopher R. Watters, M.D. (Michigan, 1983).

Assistant Residents: Paul A. Abson, M.D. (Washington, 1986); James K. Aymond, M.D. (Louisiana State, 1986); Gene D. Branum, M.D. (Duke, 1986); Jonathan T. Donaldson, M.D. (Boston Univ., 1986); Robert K. Dyer,

Jr., M.D. (Bowman Gray, 1986); Jean C. Evans, M.D. (Albany, 1981); Sandra E. Glasson, M.D. (Duke, 1986); William J. Gray III, M.D. (Uniformed Services Univ. 1983); James F. Holtzclaw, M.D. (Emory, 1986); David Hoyt, M.D. (Duke, 1986); Peter T. Janicki, M.D. (Baylor, 1986); Scott H. Johnson, M.D. (Duke, 1986); Martha B. Kennedy, M.D. (Mississippi, 1986); Jane E. Lacey, M.D. (Uniformed Services Univ., 1984); Kihan F. Lee, M.D. (Harvard, 1986); John A. Mekras, M.D. (Miami, 1986); Raymond R. Monto, M.D. (New York, 1986); Mark D. Plunkett, M.D. (North Carolina at Chapel Hill, 1986); J. Jeffrey Poggi, M.D. (Rochester, 1986); Sean P. Scully, M.D. (Rochester, 1986); Phillip P. Shadduck, M.D. (California at Los Angeles, 1986); Ronald J. Weigel, M.D. (Yale, 1986).

First Year Residents: Brett C. Barnes, M.D. (Baylor, 1987); Amir Z. Beshai, M.D. (California at Los Angeles, 1987); Margaret S. Cheng, M.D. (Duke, 1987); Andrew Coundouriotis, M.D. (Duke, 1987); Thomas A. D'Amico, M.D. (Columbia, 1987); Andrew M. Davidoff, M.D. (Pennsylvania, 1987); Samuel S. Fleming, M.D. (Med. Coll. of Georgia, 1987); Stanley S. Gall, Jr., M.D. (Duke, 1987); Langdon A. Hartsock, M.D. (Duke, 1987); Allan D. Kirk, M.D. (Duke, 1987); Claude T. Moorman III, M.D. (Cincinnati, 1987); George L. Murrell, M.D. (Georgetown, 1987); Christopher G. Paramore, M.D. (Duke, 1987); Scott K. Pruitt, M.D. (Columbia, 1987); Cemil M. Purut, M.D. (Duke, 1987); Julian Safir, M.D. (Maryland, 1987); James E. Saunders, M.D. (Oklahoma, 1987); Thomas A. Schroeter, M.D. (Bowman Gray, 1987); Lewis B. Schwartz, M.D. (Chicago, 1987); Mark W. Sebastian, M.D. (Rush, 1987); Daryl E. Warder, M.D. (Johns Hopkins, 1987); Steven C. Winters, M.D. (New Jersey, 1987); Paul R. Young, M.D. (Connecticut, 1987).

DIVISION OF NEUROSURGERY

Instructors and Chief Residents: Amr O. M. El-Naggar, M.D. (Ain Shams Univ. Hosp., Egypt, 1978); Eric D. Weber, M.D. (New York, 1981).

Assistant Residents: Estrada Bernard, M.D. (Duke, 1983); Herbert E. Fuchs, M.D. (Duke, 1984); Carter S. Harsh, M.D. (Alabama, 1985); Diane L. Kraemer, M.D. (Boston, 1986); Charles E. Rawlings, M.D. (Duke, 1982); Eugene Rossitch, Jr., M.D. (Duke, 1985); Steven J. Schiff, M.D. (Duke, 1980); Jon M. Silver, M.D. (Duke, 1986); Jacob N. Young, M.D. (Duke, 1986).

DIVISION OF ORAL SURGERY

Instructor and Chief Resident: Dale R. Duncan, D.D.S. (Emory, 1984).

Assistant Residents: Michael T. Dachowski, D.M.D. (Pennsylvania, 1985); Thomas S. McGraw, D.D.S. (Pennsylvania, 1985).

DIVISION OF ORTHOPAEDIC SURGERY

Instructors and Chief Residents: George S. E. Aitkin, M.D. (Case Western Reserve, 1982); James B. Billys, M.D. (Jefferson, 1981); W. Daniel Caffrey, M.D. (Duke, 1982); James C. Califf, M.D. (Duke, 1981); L. Scott Levin, M.D. (Temple, 1982); Ralph A. Liebelt, M.D. (Case Western Reserve, 1982); Gary M. Lourie, M.D. (Duke, 1982); Robert M. Peroutka, M.D. (Maryland, 1982); Joseph H. Wombwell, M.D. (Kentucky, 1980); Mark C. Yates, M.D. (Missouri, 1982).

Assistant Residents: Howard R. Brown, M.D. (California, 1984); Angelo J. Colosimo, M.D. (New York, 1984); Jeffrey Ecker, M.D. (Western Australia, 1978); Daniel M. Estok II, M.D. (Miami, 1983); Herbert S. Gates III, M.D. (Virginia, 1985); John S. Gaul III, M.D. (North Carolina at Chapel Hill, 1982); H. John Gerhard, M.D. (Harvard, 1981); Reginald L. Hall, M.D. (Duke, 1983); John S. Kirkpatrick, M.D. (Bowman Gray, 1985); Tally E. Lassiter, Jr., M.D. (Harvard, 1982); Robert W. Leyen, M.D. (Tennessee, 1977); William J. Mallon, M.D. (Duke, 1984); David H. McCord, M.D. (Cornell, 1984); Michael J. McNamara, M.D. (Duke, 1984); William J. Murzic, M.D. (Tufts, 1984); James E. Nitka, M.D. (Arizona, 1983); Steven C. Poletti, M.D. (California at Irvine, 1985); Andrew R. Scott, M.D. (Kansas, 1983); Mark B. Silbey, M.D. (Columbia, 1985); Thomas C. Spangler, M.D. (North Carolina at Chapel Hill, 1984); Kevin P. Speer, M.D. (Johns Hopkins, 1985); Glen D. Sbin, M.D. (Downstate Med. Center, 1982); Cary Tanner, M.D. (Stanford, 1981); Dean C. Taylor, M.D. (Duke, 1985); Mario Turi, M.D. (North Carolina at Greenville, 1984); David C. Urquia, M.D. (Virginia, 1983); Thomas P. Vail, M.D. (Loyola, 1985); William G. Ward, M.D. (Duke, 1978); Erich W. Wouters, M.D. (Alabama, 1985).

DIVISION OF OTOLARYNGOLOGY

Instructors and Chief Residents: Chester P. Rollins, M.D. (Med. Coll. of Georgia, 1983); Joseph D. Siefker, M.D. (Louisiana, 1983); Daniel Whitley, Jr., M.D. (North Carolina at Chapel Hill, 1983).

Assistant Residents: Ray H. Cameron, M.D. (Wisconsin, 1984); Thomas E. Jordan, M.D. (Maryland, 1984); Anthony E. Magit, M.D. (California at San Diego, 1985); Christopher E. Newman, M.D. (Bowman Gray, 1984); Jon F. Strohmeyer, M.D. (Louisiana, 1985); Douglas J. Wermuth, M.D. (Wisconsin, 1984).

DIVISION OF PLASTIC AND MAXILLOFACIAL SURGERY

Instructors and Chief Residents: Robert Ball, Jr., M.D. (West Virginia, 1981); William B. Barber II, M.D. (South Carolina, 1975).

Assistant Residents: Scot A. Brenman, M.D. (Jefferson, 1981); Michael Clinton, M.D. (Alabama, 1982); Christopher P. Demas, M.D. (Cincinnati, 1981); Edward Eades, M.D. (Texas at Houston, 1981); Jay A. Goldberg, M.D. (Pittsburgh, 1982); Joel E. Pessa, M.D. (Massachusetts, 1980).

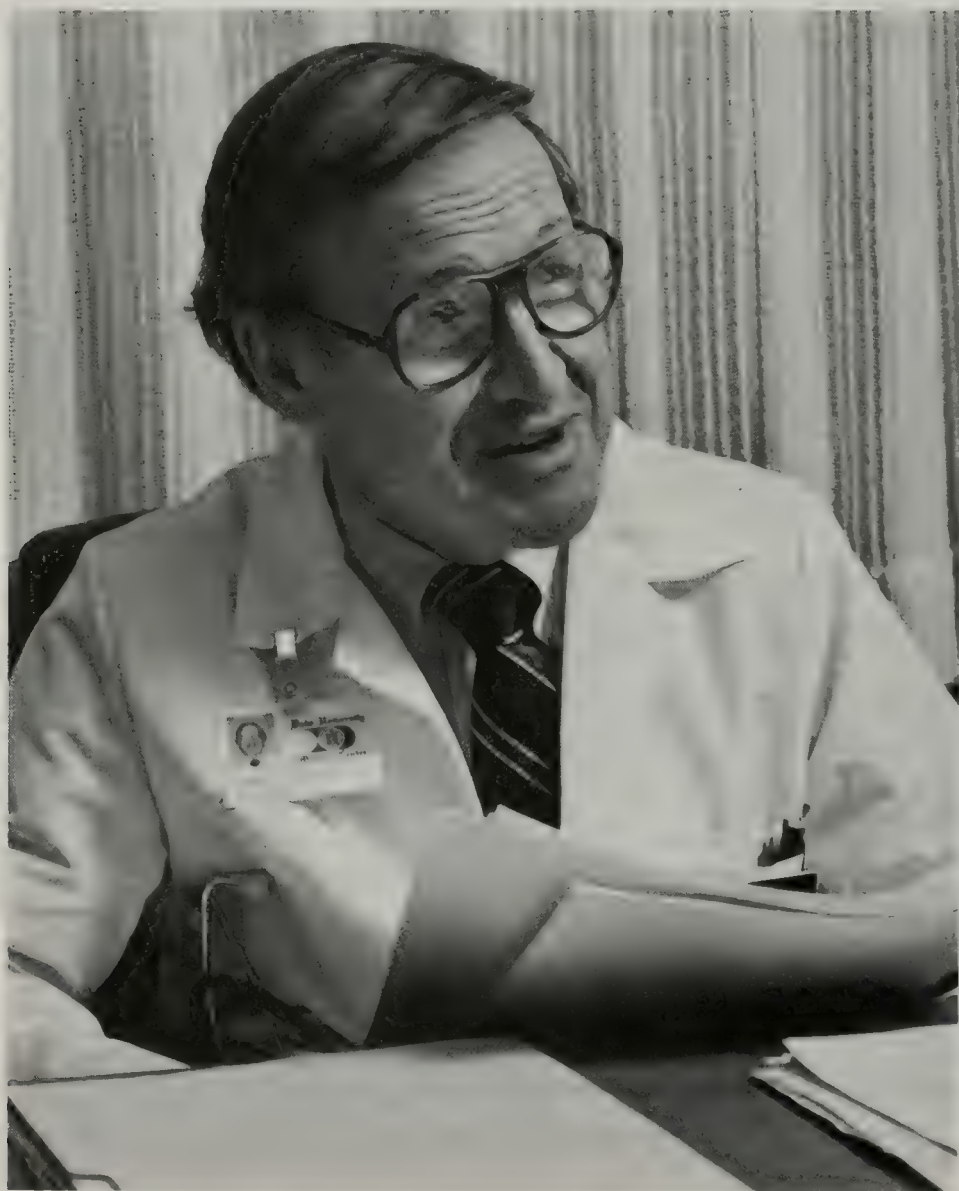
Research Fellow: Edmond Ritter, M.D. (Washington Univ., 1983).

DIVISION OF UROLOGY

Instructors and Chief Residents: Michael T. Maggio, M.D. (Loyola, 1982); Mark B. Susskind, M.D. (Duke, 1982); Kendall L. Wise, M.D. (Vanderbilt, 1982).

Assistant Residents: John E. Danneberger, M.D. (Pittsburgh, 1982); Andy K. Das, M.D. (Northwestern, 1984); Steven C. Flashner, M.D. (Jefferson, 1982); James A. Flatt, M.D. (Vanderbilt, 1985); Robert P. Fleischer, M.D. (Duke, 1982); Paul A. Hatcher, M.D. (Duke, 1983); Ronald Kaufman, M.D. (George Washington, 1983); Nancy A. Little, M.D. (Jefferson, 1983); Bruce E. Woodworth, M.D. (East Tennessee, 1983).

Research Fellows: Niall Buckley, M.B., B.Ch. (University College, Dublin, 1979); Samuel M. Currin, M.D. (South Carolina, 1984); Sang Eun Lee, M.D. (Seoul National University, Korea, 1975).



Class of 1988

Ahearne, Paul M. (Duke), McLean, Virginia
Anderson, Ian C. (Stanford), Stanford, California
Anderson, William D. (Duke), Durham, North Carolina
Bolster, David E. (North Carolina at Chapel Hill), Durham, North Carolina
Bolster, Marcy Behar (Duke), Durham, North Carolina
Brodeur, David (William and Mary), Brunswick, Maine
Bryce, Sarah S. (Yale), Philadelphia, Pennsylvania
Budnick, Sydna G. (Brown), Clifton, New Jersey
Burk, Robert W., III (Virginia), Parkersburg, West Virginia
Calle, Angela M. (Loyola), Phoenix, Maryland
Calton, William C., Jr. (Davidson), Charlotte, North Carolina
Chen, Serena H. (Brown), Bryn Mawr, Pennsylvania
Chow, Gregory H. (Johns Hopkins), Bridgewater, New Jersey
Constantine, Jeffrey M. (Duke), Jacksonville, Florida
Cook, Perry F. (Stanford and Duke), Raleigh, North Carolina
Cramer, Pia Gemperli (Cornell), Pleasant Valley, New York
Cox, Patricia M. (Fordham), Point Lookout, New York
Cross, Pamela (Middlebury), Charlottesville, Virginia
Crovitz, Deborah H. (Chicago), Durham, North Carolina
Crownover, Brenda P. (Linfield), Bellevue, Washington
Cullen, Joseph P. (Cornell), West Hartford, Connecticut
Culton, Mark A. (Duke), Charlotte, North Carolina
Doron, Mia Wechsler (Williams), Weston, Massachusetts
Evans, Avery J. (Virginia) Virginia Beach, Virginia
Fang, Jim C. T. (Duke), Tuscaloosa, Alabama
Foster, Jill A. (Oberlin), Silver Spring, Maryland
Frantz, Frazier W. (U.S. Naval Academy), Sicklerville, New Jersey
Frazier, David W. (Duke), Roanoke Rapids, North Carolina
Freeman, Bradley D. (Florida), Longwood, Florida
Gephart, Christina M. (Virginia), Arlington, Virginia
Gibson, James B. (California at Davis), San Francisco, California
Go, Loewe O. (Duke), Quezon City, Philippines
Goldberg, Marc A. (Duke), Brooklyn, New York
Grossnickle, Mark E. (Duke), Greenville, North Carolina
Haim, Kevin (Duke), Silver Spring, Maryland
Hill, Joseph A., Jr. (Wake Forest) Burlington, North Carolina
Hjelmstad, Russell (Colorado), Englewood, Colorado
Hoehner, Jeff C. (Idaho), Pocatello, Idaho
Hoffman, Kristina M. (Loyola Marymount), Clearwater, Florida
Hollett, Michael D. (Duke), Arlington Heights, Illinois
Holway, Brent P. (Vanderbilt), Charlotte, North Carolina
Huang, Mary S. (Harvard/Radcliffe), Houghton, Michigan
Hulka, Gregory F. (Northwestern), Chapel Hill, North Carolina
Humayun, Mark S. (Georgetown), Potomac, Maryland
Ibrahim, George K. (Davidson), Smithfield, North Carolina
Jeffries, Jennifer J. (Virginia), Washington, D.C.
King, Robert T., III (Duke), Hickory, North Carolina
Kinsel, Laura B. (Washington), Richland, Washington
Kinsman, James M. III (North Carolina at Chapel Hill), Louisville, Kentucky
Koriwchak, Michael J. (Bucknell), McMurray, Pennsylvania
Landay, Kimberly (Brown), Pittsburgh, Pennsylvania
Leclair, Denise M. (Duke), Silver Spring, Maryland
Lee, Joon S. (Dartmouth), Morganton, North Carolina
Lee, Su Kin (Bristol), Sandakan, Malaysia
Leiser, Jeffrey D. (Harvard) Englewood, California
Lontkowski, Susan M. (Duke), Lafayette Hill, Pennsylvania
Lyerly, Mark A. (North Carolina at Chapel Hill), Rockwell, North Carolina
Lyerly, Walker, IV (Davidson), Hickory, North Carolina
Mao, Lisa K. (Rice), Scottsdale, Arizona
Markowitz, Jay S. (Columbia), Woodmere, New York
Marrano, Neal N. (Brown), APO New York, New York
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McDonough, Robert S. (Texas), Bloomington, Minnesota
McLoughlin, Thomas (Johns Hopkins), Tinton Falls, New Jersey

McQuigg, Molly (Wooster), Delaware, Ohio
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 Molter, David W. (Duke) Durham, North Carolina
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 Oetting, Marguerite Henry (Duke), St. Louis, Missouri
 Ozaki, Charles K. (Duke), Lake City, Florida
 Panza, William S. (Johns Hopkins), Emerson, New Jersey
 Patton, Suzanne E. (Dartmouth) Moorestown, New Jersey
 Paul, Randal H. (Baylor) Lake Jackson, Texas
 Podolak, Michael J. (Duke), Kensington, Maryland
 Pollard, John B. (California at Berkeley), Carmel, California
 Poteat, Harry T. (Pomona), Paoli, Pennsylvania
 Powell, Allen O. (Massachusetts Instit. of Tech.), Wethersfield, Connecticut
 Pressman, Eva K. (Brown), Bayside, New York
 Pyne, John I. B., Jr. (Dartmouth), Princeton, New Jersey
 Racine, Susan Murchison (Duke), Wilmington, North Carolina
 Rosenberg, Mark R. (Duke), Gastonia, North Carolina
 Rossitch, John C. (North Carolina at Chapel Hill), Winston-Salem, North Carolina
 Scarlett, Susan M. (Clemson), Hilton Head Island, South Carolina
 Schmidt, David M. (Northwestern), Cascade, Wisconsin
 Schroering, Edward S., Jr. (Duke), Louisville, Kentucky
 Segreti, Eileen M. (Pennsylvania), Bethesda, Maryland
 Simeone, Diane M. (Brown), North Kingstown, Rhode Island
 Simmons, Rache M. (Duke), Matthews, North Carolina
 Skapek, Stephen X. (Duke), Shaker Heights, Ohio
 Smith, Bryan W. (North Carolina at Chapel Hill), New Bern, North Carolina
 Sternbergh, W. Charles, III (Brown), Chattanooga, Tennessee
 Stinson, Michael S. (North Carolina at Greensboro), Greensboro, North Carolina
 Stone, Lisa M. (Pomona), Phoenix, Arizona
 Straznickas, John R. (Illinois), Rockford, Illinois
 Sukin, Craig A. (Dartmouth), Billings, Montana
 Swearengin, Dennis R. (Davidson), Statesville, North Carolina
 Talbot, Gregory A. (North Carolina at Chapel Hill), Concord, North Carolina
 Tedder, Mark (North Carolina State), Greensboro, North Carolina
 Terris, David (Cornell), Upper Saddle River, New Jersey
 Tope, Whitney D. (Duke), Decatur, Georgia
 Truett, Artis P., III (Georgia Inst. of Tech.), Vidalia, Georgia
 Tweed, J. Lindsey (Dartmouth), San Francisco, California
 Tyree, Scott J. (Duke), Durham, North Carolina
 Vance, Charles R. (Princeton), Birmingham, Alabama
 Van Hoesen, Karen B. (California at Davis), Orinda, California
 Walsh, Kim M. (Dartmouth), Monona, Wisconsin
 Wang, Clark J. (Duke), Ann Arbor, Michigan
 Weck, Karen E. (Duke), Great Falls, Virginia
 Wilson, Brett L. (Duke), Conway, South Carolina
 Wolff, Steven D. (Yale), Quincy, Massachusetts
 Yang, Syngil (Yale), Chappaqua, New York
 Yoshino, Paul (Occidental) San Pedro, California
 Zeidman, Seth M. (Duke), Cherry Hill, New Jersey

Class of 1989

Acker, Jeffrey C. (Dartmouth), Solon, Ohio
 Allen, Patti Jean (Colorado), Boulder, Colorado
 Alyea, Edwin P. III (Duke), Georgetown, Kentucky
 Armstrong, Michael, Jr. (Princeton), Richmond, Virginia
 Barbano, Edward F., Jr. (Duke), Kensington, Maryland
 Barboriak, Peter N. (Marquette), Wood, Wisconsin
 Bates, Michael D. (Duke), Rochester, Michigan
 Beatty, Peter T. (Harvard), Durham, North Carolina
 Becker, Kyra J. (Virginia Tech.), Red Lion, Pennsylvania
 Bond, Pamela E. (Hamilton), Massena, New York
 Book, Michael R. (Johns Hopkins), North Babylon, New York
 Brackett, Jeffrey C. (Duke), Athens, Georgia
 Bronstein, Seymour M. (Duke), Durham, North Carolina
 Brown, Thomas M. (Kentucky), Lexington, Kentucky

Bryant, Randall M. (Princeton), Newport, North Carolina
 Bumgarner, John R. (Memphis State), Dallas, Texas
 Buser, Steven D. (Michigan), Lake Orion, Michigan
 Carpenter, Sarah A. (Stanford), Arvada, Colorado
 Carson, Susan L. Culp (North Carolina at Chapel Hill), Charlotte, North Carolina
 Cech, Alex C. (Yale), Bronxville, New York
 Chang, Steven C. (Tufts), Holden, Massachusetts
 Chow, Caroline C. (Duke), Alexandria, Virginia
 Collins, Bradley H. (Princeton), Greensboro, North Carolina
 Correa, Javier G. III (Campbell), Bellevue, Washington
 Crane, Charles M. (Stanford), Bellevue, Washington
 Darling, Thomas N. (Houghton), Rochester, New York
 Davidson, Robert C. (Virginia), Vienna, Virginia
 Davis, Cornelius A. (North Carolina at Chapel Hill), Winston-Salem, North Carolina
 Dockery, Stephen E. (Union), Greensboro, North Carolina
 Dontfraid, Franklyn (Connecticut), New Haven, Connecticut
 Dovey, Mark E. (Duke), Greensburg, Pennsylvania
 Earnhardt, Richard C. (North Carolina State), Millers Creek, North Carolina
 Edelberg, Jay M. (Columbia), Shaker Heights, Ohio
 Ellsworth, Carolyn Ann Huff (Drury), St. James, Missouri
 Eshbaugh, Willis G., Jr. (Emory), Ft. Myers, Florida
 Evans, Josephine Adamson (Duke), Norfolk, Virginia
 Faberowski, Nicholas (Duke), Pompano Beach, Florida
 Fairchild, Karen D. (Wellesley), Raleigh, North Carolina
 Farmer, Douglas G. (Duke), Charlotte, North Carolina
 Farmer, Roger W. (South Carolina), Anderson, South Carolina
 Farmer, Thomas H. R. (Duke), Durham, North Carolina
 Featherston, Mark W. (Duke), Charlotte, North Carolina
 Flanagan, Brian (Davidson), Lakeland, Florida
 Flick, Conrad L. (North Carolina State), Taylorsville, North Carolina
 Flyer, Jack L. (Cornell), Rockville, Maryland
 Forman, Mark S. (Yale), Great Neck, New York
 Friedberg, Richard C. (Stanford), Longboat Key, Florida
 Gest, Kathleen L. (North Carolina at Chapel Hill), Dunwoody, Georgia
 Gingrich, Jay A. (Kansas), Fairway, Kansas
 Gordon, John D. (Princeton), Milton, Massachusetts
 Graff, Jonathan M. (Miami, Ohio), Xenia, Ohio
 Hale, Laura P. (Michigan State), Durham, North Carolina
 Hall, Bruce L. (Princeton), Warminster, Pennsylvania
 Hammes, Stephen (Cornell), Ithaca, New York
 Hendrickson, Steven C. (North Carolina at Chapel Hill), Danville, Virginia
 Heng, Michelle (Massachusetts Institute of Technology), Lincoln, Nebraska
 Hensley, Martee L. (Duke), Sebring, Florida
 Herlong, James R. (Davidson), Rock Hill, South Carolina
 Holmes, Jude, Jr. (North Carolina at Chapel Hill), Maple Hill, North Carolina
 Hooch, Jennifer L. (Oberlin), Gary, Indiana
 Hyer, Randall N. (United States Naval Academy), Los Alamos, New Mexico
 Jablonover, Michael R. (Duke), Raleigh, North Carolina
 Jacobs, Alan R. (Duke), Wyckoff, New Jersey
 Jerome, Keith R. (Georgetown), Ashland, Kentucky
 Joines, Ronald W., Jr. (Duke), Cincinnati, Ohio
 Kaplan, Todd (New York at Stony Brook), Baldwin, New York
 Karegeannes, James C. (South Carolina), Spartanburg, South Carolina
 Kaufman, Jeffrey (New York at Stony Brook), Plainview, New York
 Keithahn, Stephen T. (Yale), Benson, Minnesota
 Kenan, Daniel J. (William and Mary), Durham, North Carolina
 Kime, Robert C. III (Wheaton), Fairview Park, Ohio
 Koopersmith, Tina B. (Duke), Hewlett, New York
 Laforet, Genevieve (Harvard/Radcliffe), Chestnut Hill, Massachusetts
 Landon, Mark (California at San Diego), Greenville, North Carolina
 LeCroy, Charles M., Jr. (Duke), Lexington, North Carolina
 LeMosy, Ellen K. (Florida), Orlando, Florida
 Lin, Janet C. (Harvard), Arcadia, California
 Madden, John F. (Amherst), New Britain, Connecticut
 Maddox, Ricky P. (Erskine), Donalds, South Carolina
 Madwed, David S. (Duke), Easton, Connecticut
 Maki, Jeffrey H. (California at San Diego), Davis, California

Mast, Alan (Illinois), Urbana, Illinois
 Mavros, Sharon A. (Johns Hopkins), Bayville, New York
 Maxfield, Steven R. (Utah), Salt Lake City, Utah
 Maynor, Carolyn Chang (North Carolina at Chapel Hill), Fayetteville, North Carolina
 McDonnell, Kenneth P. (Notre Dame), Alexandria, Virginia
 McGinnis, Hirschel D. (Maryland), Lanham, Maryland
 McIntosh, Mark S. (Duke), Sanford, Florida
 Mody, Elinor A. (Duke), Potomac, Maryland
 Moore, Kenneth E. (Maryland), Rockville, Maryland
 Moskaluk, Christopher A. (Illinois), Midlothian, Illinois
 Muly, Emil C., III (Johns Hopkins), Southport, Connecticut
 Myers, Barry S. (Toronto), Toronto, Ontario, Canada
 Nastala, Chet L. (Harvard), Philadelphia, Pennsylvania
 Nathan, Lauren (Stanford), Palo Alto, California
 Nichols, Kim E. (Dartmouth), Malden Bridge, New York
 Nicholson, John C. (North Carolina at Chapel Hill), Charlotte, North Carolina
 Odom, Angela D. (Dillard), Shreveport, Louisiana
 Owen, Clarence H. (Duke), Osprey, Florida
 Patel, Dhavalkuma D. (Duke), Charlotte, North Carolina
 Persons, Derek A. (Duke), Gaffney, South Carolina
 Peters, Brandon M. (North Carolina at Chapel Hill), Elizabeth City, North Carolina
 Porter, Lisa E. (William and Mary), Springfield, Virginia
 Pracyk, John B. (Duke), Oak Brook, Illinois
 Query, Charles C., Jr. (Duke), Kannapolis, North Carolina
 Riska, Paul F. (Cornell), Staten Island, New York
 Roberts, Joan T. (North Carolina at Greensboro), Greensboro, North Carolina
 Rosenberg, Mindy C. (Pennsylvania), Plantation, Florida
 Rubenstein, David S. (Princeton), Brooklyn, New York
 Russell, Mark W. (Cornell), Orchard Park, New York
 Sater, Richard A. (Florida), Cocoa Beach, Florida
 Savitt, Michael A. (Duke), West Allis, Wisconsin
 Schmaltz, Robert A. (Duke), Fairfield, Ohio
 Schuman, Robert W. (Pennsylvania), Merrick, New York
 Schwartz, Marc S. (Emory), Holmdel, New Jersey
 Shoup, Scott A. (Northwestern), Omaha, Nebraska
 Simons, Grant (Duke), Closter, New Jersey
 Skaryak, Lynne A. (North Carolina at Chapel Hill), Charlotte, North Carolina
 Slemple, Catherine C. (Princeton), Richmond, Virginia
 Smith, Matthew R. (Canisius), Lakeview, New York
 Smith, Spencer M. (Brigham Young), Mesa, Arizona
 Sparks, Jeffrey D. (Yale), Wallingford, Pennsylvania
 Stasheff, Steven F. (North Carolina at Chapel Hill), Raleigh, North Carolina
 Stenzel, Timothy T. (Grinnell), New Hope, Minnesota
 Stevens, William R. (North Carolina State), Raleigh, North Carolina
 Swaim, Mark W. (North Carolina at Greensboro), Kernersville, North Carolina
 Tarry, Wallace C. (Hampden-Sydney), Oxford, North Carolina
 Terrell, Grace E. (North Carolina at Chapel Hill), Siler City, North Carolina
 Thierjung, Christina (Princeton), Rye, New York
 Toscano, Joseph D. (Dartmouth), Merritt Island, Florida
 Tourian, Karen A. (St. John's), Durham, North Carolina
 Trachman, Jayne F. (Cornell), Brooklyn, New York
 Vandermeer, Emile (North Carolina at Chapel Hill), Clayton, North Carolina
 Ventimiglia, Joe B. (Dartmouth), Arlington, Texas
 Wang, Henry Z. (Northwestern), Pittsburgh, Pennsylvania
 Webb, Michael S. (Virginia), Norfolk, Virginia
 Wei, Maria L. (Michigan), Ann Arbor, Michigan
 Wiener, Dana Nowicki (Fordham), Carlstadt, New Jersey
 Wyatt, Richard M. (Washington), Calhan, California
 Zaroff, Wendy (Yale), Rochester, New York

Class of 1990

Adamson, William T. (Princeton), Norfolk, Virginia
 Ahmed, Yasmath F. (Massachusetts Institute of Technology), Binghamton, New York
 Anderson, Karen Sue (Virginia), Wilmington, Delaware
 Avva, Ravisankar R. (North Carolina at Chapel Hill), Greensboro, North Carolina

Axelrod, Mac (California at Berkeley), Beverly Hills, California
 Bacon, David S. (Oberlin), Midland, Michigan
 Bass, James C. (Middlebury), Charlotte, North Carolina
 Black, Kevin J. (Brigham Young), Lehi, Utah
 Blair, Jerry Ray (Georgetown), Durham, North Carolina
 Boisselle, Phillip M. (North Carolina at Chapel Hill), Fayetteville, North Carolina
 Bravo, Nicola S. (George Washington), Silver Spring, Maryland
 Brooks, Werner C. (Massachusetts Institute of Technology), Fayetteville, North Carolina
 Buchsbaum, Tamar J. (Dartmouth), Wyncote, Pennsylvania
 Bunton, Jayne L. (Wake Forest), Union Grove, North Carolina
 Chan, Krammie M. (North Carolina at Chapel Hill), Charlotte, North Carolina
 Chao, Albert C. (North Carolina at Chapel Hill), Fayetteville, North Carolina
 Checiani, Gregg C. (Dartmouth), Natick, Massachusetts
 Cheng, Christine A. (Kansas), Lawrence, Kansas
 Colligan, Joseph F., Jr. (Chicago), Jacksonville, North Carolina
 Cope, Darrell Anthony (North Carolina State), Cary, North Carolina
 Dalton, James D., Jr. (Clemson), Summerville, South Carolina
 Doce, Stacy L. (Union), Newburgh, New York
 Dudley, Raymond A. (Duke), Houston, Texas
 Enright, Jill (Duke), Greensboro, North Carolina
 Epstein, Robert E. (Pennsylvania), Edison, New Jersey
 Feeser, Scott A. (Duke), Plainsboro, New Jersey
 Fischer, Marc (Duke), Jericho, New York
 FitzHarris, Gregory P. (U. S. Military Academy), Gainesville, Florida
 Frucht, David M. (Virginia), Ft. Washington, Maryland
 Garner, Juli A. (Virginia), Aberdeen, Maryland
 Ghotbi, Muhammad S. (Loyola), Towson, Maryland
 Gleason, Lisa (Duke), Groton, Massachusetts
 Go, Joan M. (Johns Hopkins), Ellicott City, Maryland
 Gottlieb, Justin L. (North Carolina at Chapel Hill), Winston-Salem, North Carolina
 Graham, Bethany (Duke), Nashville, Tennessee
 Gugenheim, Robin (Johns Hopkins), Fair Lawn, New Jersey
 Hall, Charles D. (North Carolina at Chapel Hill), Burlington, North Carolina
 Harrell, Robert L., III (North Carolina at Chapel Hill), Baltimore City, Maryland
 Hawkins, Saralyn R. (Erskine), Gastonia, North Carolina
 Hessling, Janice J. (Notre Dame), Carrboro, North Carolina
 Holder, Chad A. (Wake Forest), Clemmons, North Carolina
 Holt, Peter D. (Virginia), Silver Spring, Maryland
 Inge, W. Warriner, III (Davidson), Dover, Delaware
 Karfias, Cynthia S. (Duke), Chicago, Illinois
 Koger, Kim E. (Florida), Orlando, Florida
 Lilley, Eileen R. (Louisiana), Slidell, Louisiana
 Malisch, Timothy W. (Missouri), Rolla, Missouri
 McAvoy, Kathleen T. (Virginia Polytechnic Institute), Warminster, Pennsylvania
 McCahill, Laurence E. (Duke), Western Springs, Illinois
 McDonald, Josh W. (Princeton), Huntington, New York
 McKee, Scott D. (Colorado), Aurora, Illinois
 McMillan, Edward B. (Duke), Charleston, West Virginia
 Miller, Mark F. (Baylor), Midland, Texas
 Moran, Kimberly (Maryland), Columbia, Maryland
 Morrow, Jennifer E. (Rice), Cedar Falls, Iowa
 Morrow, Nathan G. (Williams), Perrysburg, Ohio
 Moseley, Walton (Duke), Raleigh, North Carolina
 Pacifico, Albert, Jr. (Duke), Helena, Alabama
 Paolini, John F. (Tulane), New Orleans, Louisiana
 Papadopoulos, Spyridon (North Carolina at Chapel Hill), Sanford, North Carolina
 Paranka, Julia A. (Colorado State), Ft. Collins, Colorado
 Perona, Barbara (Illinois at Chicago), Chicago, Illinois
 Perry, William B. (Louisiana), Hammond, Louisiana
 Pratt, Rebecca A. (Wake Forest), Durham, North Carolina
 Pruthi, Asit S. (Harvard), San Jose, California
 Rajan, Rishi R. (Maryland), Gaithersburg, Maryland
 Rettig, Matthew B. (Wesleyan), Beverly Hills, California
 Rice, Jeffrey J. (Texas at Austin), San Angelo, Texas
 Robbins, Robert J. (Louisiana), Metairie, Louisiana
 Robertson, Jennie L. (North Carolina at Chapel Hill), Burlington, North Carolina
 Rodabaugh, Kerry J. (East Carolina), Raleigh, North Carolina

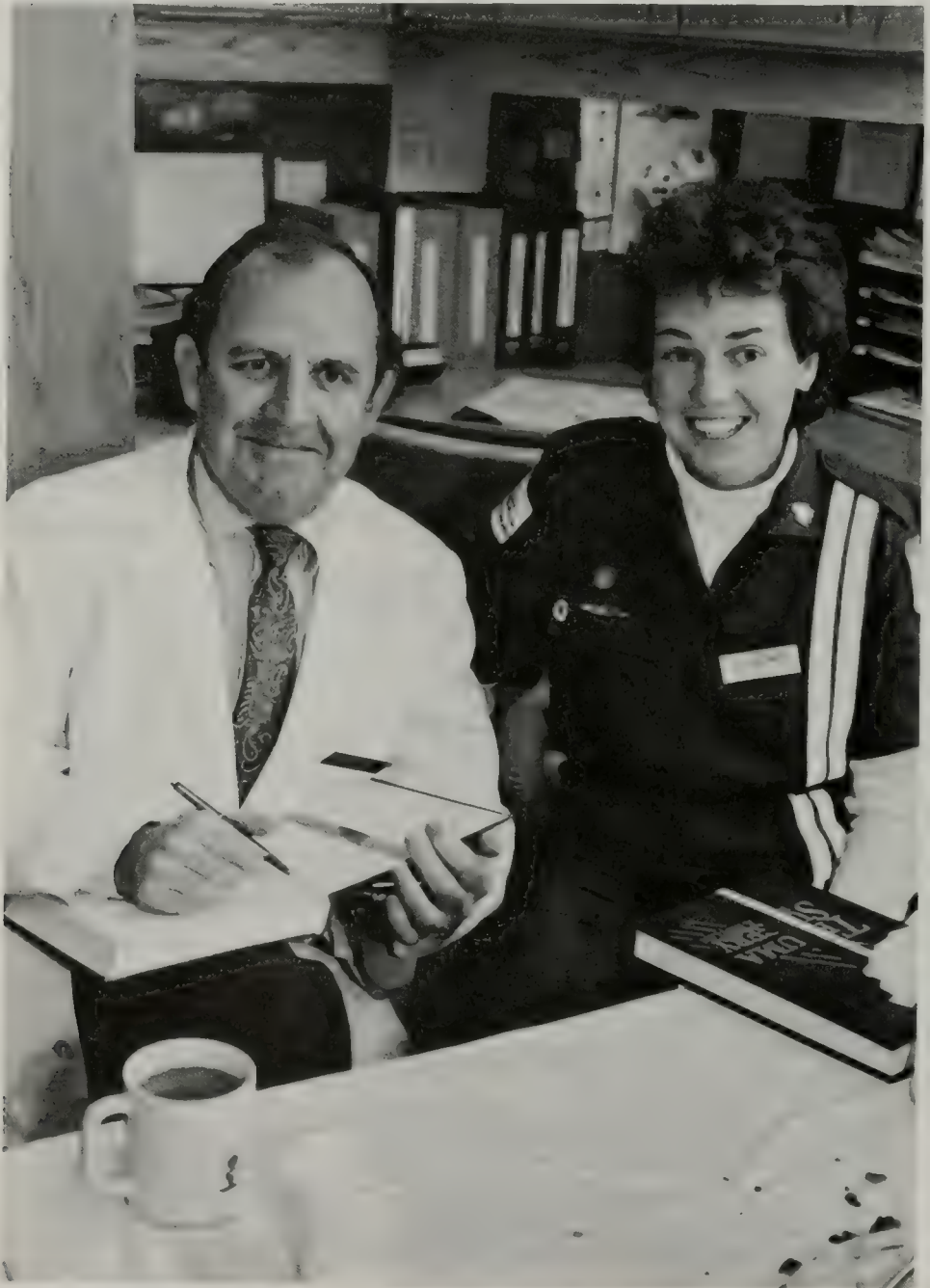
Rustad, Todd J. (St. Olaf), Lincoln, Nebraska
 Schuster, James (South Dakota), Rapid City, South Dakota
 Shoemaker, David L. (Davidson), Raleigh, North Carolina
 Spiegel, David A. (Duke), Durham, North Carolina
 Starck, Linda M. (Columbia/Hunter), Middle Village, New York
 Stein, Adam D. (Pennsylvania), Closter, New Jersey
 Stoler, Robert C. (Duke), Louisville, Kentucky
 Stout, Steven P. (Harvard), Greensboro, North Carolina
 Strain, Jay J. (Pennsylvania), Riverdale, New York
 Stranne, Steven (Duke), Columbus, Ohio
 Sumrall, Richard W. (U. S. Air Force Academy), Merritt Island, Florida
 Telesetsky, Stephanie (Duke), Rockville, Maryland
 Thielman, Nathan M. (Wheaton), Montreat, North Carolina
 Thomas, Laura O. (Princeton), St. Louis, Missouri
 Tilly, Shauna S. (Duke), Charlotte, North Carolina
 Tsai, Donald E. (Harvard), Bethesda, Maryland
 Vakkur, Mark (U. S. Military Academy), South Bend, Indiana
 Van Steyn, Scott J. (Duke), Worthington, Ohio
 Virnelli, Suzanne (Dartmouth), Winchester, Massachusetts
 Waite, Kathleen A. (Case Western Reserve), Huron, Ohio
 Wallenal, Michele (Virginia), Flemington, New Jersey
 Wang, Andrew (Duke), Durham, North Carolina
 Warner, Michael A. (Duke), Albany, Oregon
 Watrous, Susan M. (Vassar), Vestal, New York
 Watson, Mark (Rice), Durham, North Carolina
 Woodward, Pamela (Duke), Newton, Massachusetts
 Wu, Doris P. (Duke), Davie, Florida
 Wu, Justin J. (Duke), Raleigh, North Carolina
 Yacullo, Robert C., Jr. (Duke), Durham, North Carolina
 Yeh, Flora M. (Vanderbilt), Jacksonville, Alabama
 Young, Katherine B. (Duke), Newport News, Virginia
 Zakaria, Aamir M. (Harvard), Newington, Connecticut
 Zeiler, Mari Ann (Carleton), Honolulu, Hawaii

Class of 1991

Abramson, Murray A. (Duke), Durham, North Carolina
 Alspaugh, James A., II (North Carolina at Chapel Hill), Greensboro, North Carolina
 Amato, Mary T. (Tulane), Durham, North Carolina
 Anderson, Tedra Louise (Duke), Miami, Florida
 Armitage, John Brooks (Yale), Durham, North Carolina
 Bachman, Eric S. (Cornell), Tonawanda, New York
 Barry, Todd Skipper (North Carolina at Chapel Hill), Chapel Hill, North Carolina
 Battistone, Michael J. (Southern College of Seventh-day Adventists), Hendersonville, North Carolina
 Blackford, Susan Pennington (Wellesley), Concord, New Hampshire
 Bracey, Victor A. (Pennsylvania State), Columbia, Maryland
 Buchanan, Scott A. (Brown), Lynnfield, Massachusetts
 Cazzaniga, Stefano L. (Johns Hopkins), Scarsdale, New York
 Chander, Rajat (Columbia), Raleigh, North Carolina
 Choi, Mina Nui (North Carolina at Chapel Hill), Chapel Hill, North Carolina
 Chu, Charleen T. (Harvard), Carson, California
 Clausen, Kimberly J. (Dartmouth), Dedham, Massachusetts
 Cole, Eric L. (Stanford), Durham, North Carolina
 Conrad, Timmie Joe (Purdue), Findlay, Ohio
 Corcoran, Melissa C. (Tulane), Metairie, Louisiana
 Cotterell, Adrian H. (Miami), Miami, Florida
 Coyne, Tamera D. (Brown), Malden, Massachusetts
 Cuffe, Michael S. (Massachusetts Institute of Technology), Pittsford, New York
 DeMallie, Diane A. (Cornell), Pittsford, New York
 DiBernardo, Louis R. (Harvard), West Hurley, New York
 Doe, Erin Andrew (United States Military Academy), Roswell, New York
 Dolor, Rowena J. (Duke), Columbus, Ohio
 Doyle, Kevin Michael (Virginia), Smithtown, New York
 Edwards, Paul D. (North Carolina at Chapel Hill), Raleigh, North Carolina
 Ehrmann, Martha L. (Dartmouth), Waban, Massachusetts
 Farnitano, Christopher (Duke), Mt. Sinai, New York

Farris, David B. (United States Air Force Academy), St. Augustine, Florida
 Ferguson, Juan M. (Cornell), Charleston, South Carolina
 Fortuin, Floyd D., Jr. (California at San Diego), Danville, California
 Fyda, Thomas M. (Dartmouth) Boardman, Ohio
 Gage, Jennifer C. (South Florida), St. Petersburg, Florida
 Gallup, Steven B. (North Carolina State), Raleigh, North Carolina
 Ganchi, Parham A. (Princeton), Wayne, New Jersey
 Gangarosa, Lisa M. (Cornell), Rochester, New York
 Gault, Janice Ann (Duke), La Grange, Kentucky
 Geertgens, Pamela A. (Dartmouth), Cooperstown, New York
 Gillanders, William E. (Williams), Fairfax, Virginia
 Graff, David H. (Miami), Beavercreek, Ohio
 Gupta, Amit G. (Johns Hopkins), Langhorne, Pennsylvania
 Harlan, William R. (North Carolina at Chapel Hill), Durham, North Carolina
 Harley, James E. (South Carolina), Banberg, South Carolina
 Hazzard, Susan L. (Hampshire), Lewisville, North Carolina
 Hedrick, Holly L. (Indiana), Salem, Indiana
 Hernandez, Javier (United States Military Academy), Arecibo, Puerto Rico
 Higgins, Peter Doyle (Duke), Hudson, Ohio
 Hoffman, Eric D. (Washington), Olympia, Washington
 Johansen, Kirsten L. (Dartmouth), City Island, New York
 Johnson, Cheryl M. (Harvard), Silver Spring, Maryland
 Jones, William H. (North Carolina at Chapel Hill), Durham, North Carolina
 Khawly, Joseph A. (Georgetown), Eastchester, New York
 Knaut, Andrew L. (Duke), El Paso, Texas
 Laskowitz, Daniel T. (Brown), Dobbs Ferry, New York
 Lauvetz, Robert W. (Creighton), Stillwater, Oklahoma
 Lilly, Ronald E. (Wake Forest), Beckley, West Virginia
 Lim, Chang S. (Columbia), Rockville, Maryland
 Lisanby, Sarah H. (Duke), Arlington, Virginia
 Liu, Katharine (Duke), Colonial Heights, Virginia
 Maier, Lisa (Cornell), Fredonia, New York
 Mair, Scott D. (Stanford), Rochester, Minnesota
 Mansbach, Harry H., III (Yale), Memphis, Tennessee
 Mauney, Michael C. (Duke), Asheville, North Carolina
 McAree, John A. (Michigan), Livonia, Michigan
 McDermott, Thomas P., Jr. (North Carolina at Chapel Hill), Charlotte, North Carolina
 McDonagh, Deidre (Wellesley), Winston-Salem, North Carolina
 Meissner, John D. (Nebraska), Sutherland, Nebraska
 Micca, Joseph L. (Cornell), Rochester, New York
 Minogue, Michael F. (Duke), Durham, North Carolina
 Morefield, Steven Q. (Virginia), Laredo, Texas
 Nash, S. Russell (Wake Forest), Belton, South Carolina
 Nunez, Michael J. (Louisiana State), Meraux, Louisiana
 O'Brien, James W. (Brown), Albany, New York
 Oetting, Thomas A. (Duke), Montgomery, Alabama
 Olivier, Wendy-Ann (Wesleyan), Brooklyn, New York
 Otley, Clark C. (Williams), Wayne, New Jersey
 Oury, Tim D. (Purdue), Valparaiso, Indiana
 Page, Edwin L. (Davidson), Columbus, Ohio
 Pao, Bing S. (North Carolina at Chapel Hill), Raleigh, North Carolina
 Parker, Jennifer L. (Brown), Silver Spring, Maryland
 Perno, Joseph R. (Villanova), Trenton, New Jersey
 Peters, Raymond F. (Michigan), Marquette, Michigan
 Potts, Stephen B. (Southern Methodist), Oklahoma City, Oklahoma
 Reynolds, Leslie D. (Hampton), Raleigh, North Carolina
 Ritch, Karl A. (Loyola), St. Petersburg, Florida
 Rokoske, Leslie D. (Georgetown), Boone, North Carolina
 Roth, Neil S. (Duke), Pomona, New York
 Shah, Shafqat (Johns Hopkins) Gaffney, South Carolina
 Sharpe, Ann Lee (Duke), Elm City, North Carolina
 Shih, Deborah P. (Birmingham-Southern), Huntsville, Alabama
 Soto, Pablo F. (Princeton), Birmingham, Alabama
 Stahl, John A. (Southern Methodist), Tulsa, Oklahoma
 Stille, Christopher J. (Brown), Lexington, Massachusetts
 Suhr, Christopher (North Carolina at Chapel Hill), Raleigh, North Carolina

Suhr, Yun (North Carolina State), Cary, North Carolina
Suryanarayan, Kaveri (Massachusetts Institute of Technology), Kingston, Rhode Island
Tran, Nhu-Linh T. (Hawaii), Pearl City, Hawaii
Walsh, Catherine M. (Cornell), Baldwin, New York
Walter, Keith A. (California at Davis), Lafayette, California
Weidman, Eric R. (Dartmouth), Towson, Maryland
Williams, Tracy (Duke), Winston-Salem, North Carolina
Yue, Charles C. (Duke), Wilmington, North Carolina
Zimmerman, David A. (Ohio State), Reston, Virginia



Class of 1987 with Postgraduate Year One Appointments

- Aldrich, Harry Randolph (Flushing, New York) Duke University Medical Center, Durham, North Carolina—Internal Medicine
- Allf, Bryan Ewing (Cincinnati, Ohio) University of Michigan, Ann Arbor, Michigan—Internal Medicine/Ophthalmology
- Baratz, Keith Hugh (Philadelphia, Pennsylvania) Mayo Clinic, Rochester, Minnesota—Transitional/Ophthalmology
- Belkin, Beth Broadwin (Jericho, New York) The New York Hospital—Cornell Medical Center, White Plains, New York—Psychiatry
- Bird, Lynne Marie (Muncy, Pennsylvania) University of California at San Diego, San Diego, California—Pediatrics/Neonatology
- Blow, Osbert (New York, New York) Duke University Medical Center, Durham, North Carolina—Pathology/Pediatric Surgery/Immunopathology
- Bone, Samuel Nicholas (Atlanta, Georgia) Georgia Baptist Medical Center, Atlanta, Georgia—Transitional/Diagnostic Radiology
- Bonner, Marian Edith (Hampton, Virginia) Brooke Army Medical Center, San Antonio, Texas—Internal Medicine/Diagnostic Radiology
- Boyle, Jodell Jane (Fullerton, California) Duke University Medical Center, Durham, North Carolina—Obstetrics and Gynecology
- Bremner, James Douglas (Olympia, Washington) Yale University, New Haven, Connecticut—Flexible/Psychiatry
- Broadbent, Kenneth Ray (Salt Lake City, Utah) Johns Hopkins University, Baltimore, Maryland—Pediatrics
- Butterly, David William (St. Louis, Missouri) Duke University Medical Center, Durham, North Carolina—Internal Medicine
- Cain, John Maloney, Jr. (Winter Park, Florida) Medical University of South Carolina, Charleston, South Carolina—Radiology
- Carr, David Ruddle (Clinton, North Carolina) University of Florida, Gainesville, Florida—Surgery
- Chandler, Mary (Torrance, California) University of Colorado, Denver, Colorado—Obstetrics and Gynecology
- Cheng, Margaret S. (Tustin, California) Duke University Medical Center, Durham, North Carolina—Orthopaedic Surgery
- Chryssos, Nick George, Jr. (Winston-Salem, North Carolina) North Carolina Baptist Hospital, Winston-Salem, North Carolina—Internal Medicine
- Cohen, Orin J. (Silver Spring, Maryland) The New York Hospital, New York, New York—Internal/Academic Medicine
- Collier, Thomas (Closter, New Jersey) Hershey Medical Center, Hershey, Pennsylvania—Pathology/Rehabilitative Medicine
- Cooke, David William (Upper Saddle River, New Jersey) Johns Hopkins Hospital, Baltimore, Maryland—Pediatrics
- Cooper, Randolph A. S. (McLean, Virginia) Duke University Medical Center, Durham, North Carolina—Internal/Academic Medicine
- Coundouriotis, Andrew (Durham, North Carolina) Duke University Medical Center, Durham, North Carolina—Surgery/Otolaryngology
- Crone, Wilson (Charleston, South Carolina) University of California at Riverside, Riverside, California—Developmental Anatomy
- Cumbee, Sharon R. (Wake Forest, North Carolina) Duke University Medical Center, Durham, North Carolina—Internal Medicine
- Dang-Vu, Anh Phvong (Falls Church, Virginia) Johns Hopkins Hospital, Baltimore, Maryland—Internal Medicine/Dermatology
- Darrow, David Howard (New York, New York) University of California at San Diego, San Diego, California—Surgery/Otolaryngology
- Darwin, Beverly Sumner (Concord, North Carolina) Medical College of Virginia, Richmond, Virginia—Internal Medicine/Dermatology
- Digel, Mary Carol (Wilmington, Delaware) Mountain Area Health Education Center, Asheville, North Carolina—Family Medicine
- Dimick, Richard Neil (Birmingham, Alabama) Miriam Hospital, Providence, Rhode Island—Transitional/Diagnostic Radiology
- Dyke, Cornelius McKown (Redlands, California) Presbyterian University of Pennsylvania, Philadelphia, Pennsylvania—Surgery
- Eaton, Alexander Mellon (New York, New York) Lenox Hill Hospital, New York, New York—Internal Medicine/Ophthalmology
- Edmond, Roderick Earl (Atlanta, Georgia) Fort Beaumont Hospital, El Paso, Texas—Surgery
- Gall, Stanley A., Jr. (Durham, North Carolina) Duke University Medical Center, Durham, North Carolina—Surgery
- Galumbeck, Matthew A. (Virginia Beach, Virginia) Case Western Reserve University, Cleveland, Ohio—Plastic Surgery

Gartrell, Douglas Mervyn (Lake Oswego, Oregon) Duke University Medical Center, Durham, North Carolina—Psychiatry

Gellman, Randy Lyanne (Chapel Hill, North Carolina) Yale University, New Haven, Connecticut—Psychiatry

Gelman, Jack Jay (Newton Square, Pennsylvania) Temple University, Philadelphia, Pennsylvania—Surgery

Gilliam, Linda Harris (Springfield, Virginia) Walter Reed Army Medical Center, Washington, D. C.—General Surgery

Glover, Gregory Joseph (Blythewood, South Carolina) Harvard College, Boston, Massachusetts—Health Policy

Corelick, Marc Harris (East Northport, New York) Children's Hospital National Medical Center, Washington, D. C.—Pediatrics

Hartsock, Langdon All (Charlotte, North Carolina) Duke University Medical Center, Durham, North Carolina—Orthopaedic Surgery

Hayden, Deborah Marie (Newton, Massachusetts) Baystate Medical Center, Springfield, Massachusetts—Obstetrics and Gynecology

Haynes, William Lee (Millers Creek, North Carolina) Duke University Medical Center, Durham, North Carolina—Internal Medicine/Ophthalmology

Heinz, Tad Reeve (Pittsburgh, Pennsylvania) Dartmouth University, Hanover, New Hampshire—Plastic Surgery

Ho, Victor W. (Charlotte, North Carolina) St. Mary's Hospital, San Francisco, California—Internal Medicine/Diagnostic Radiology

Holliday, James Newton (Memphis, Tennessee) Baptist Memorial Hospital, Memphis, Tennessee—Internal Medicine/Ophthalmology

Karis, John P. (Durham, North Carolina) North Carolina Memorial Hospital, Chapel Hill, North Carolina—Radiology

Kim, Paul B. (Silver Spring, Maryland) Bethesda Naval Hospital, Bethesda, Maryland—Internal Medicine/Pulmonary Critical Care

Kirk, Allan Douglas (Virginia Beach, Virginia) Duke University Medical Center, Durham, North Carolina—General Surgery

Kohler, Matthew Fessler (Spartanburg, South Carolina) Duke University Medical Center, Durham, North Carolina—Obstetrics and Gynecology

Krafchick, Dana Ellen (Livingston, New Jersey) Yale University, New Haven, Connecticut—Psychiatry

Kreager, Julia Ann (Naples, Florida) The New York Hospital, New York, New York—Internal Medicine/Radiology

Krystal, Andrew Darrell (Birmingham, Michigan) Duke University Medical Center, Durham, North Carolina—Academic Psychiatry

Lerner, Mark Harris (Salisbury, North Carolina) Emory University Atlanta, Georgia—Medicine/Pediatrics/Radiology

Leung, Cyril Y. (Long Beach, California) Harbor-University of California Los Angeles Medical Center, Los Angeles, California—Internal Medicine/Cardiology

Li, Jennifer S. (Indianapolis, Indiana) Children's Hospital of Philadelphia, Philadelphia, Pennsylvania—Pediatrics

Lobach, David Franklin (York, Pennsylvania) Duke University Medical Center, Durham, North Carolina—Internal/Academic Medicine

Lurie, Scott Nord (Baldwin, New York) Duke University Medical Center, Durham, North Carolina—Psychiatry

Mandell, Jonathan David (Longmeadow, Massachusetts) New York Hospital-Cornell, New York, New York—Cardiothoracic Surgery

Marcus, Stuart G. (Fair Lawn, New Jersey) New York University, New York, New York—General/Academic Surgery

Martin, Pamela Hermine (Queens, New York) Eastern Virginia School of Medicine-Norfolk General Hospital, Norfolk, Virginia—Family Medicine

Meyers, Steven Andrew (Bethesda, Maryland) Virginia Mason Hospital, Seattle, Washington—Transitional/Radiology

Miller, Ann Elizabeth (Portland, Oregon) Pennsylvania Hospital, Philadelphia, Pennsylvania—Obstetrics and Gynecology

Montgomery, R. Bruce (Boise, Idaho) Brigham and Women's Hospital, Boston, Massachusetts—Internal Medicine

Nanda, Sumit Kumar (Oklahoma City, Oklahoma) University of Oklahoma, Oklahoma City, Oklahoma—Internal Medicine/Ophthalmology

Nelson, Stanley Franklin (Greenwood Village, Colorado) University of California, San Francisco, California—Pediatrics/Pediatric Hematology-Oncology

Newcomb, Frederick L., Jr. (Charlotte, North Carolina) Yale-New Haven Hospital, New Haven, Connecticut—General Surgery

Paramore, Christopher Gene (Grimesland, North Carolina) Duke University Medical Center, Durham, North Carolina—Neurosurgery

Parent, Leslie Joan (Charleroi, Pennsylvania) Duke University Medical Center, Durham, North Carolina—Internal Medicine

Parlier, Reggie David (Maiden, North Carolina) North Carolina Baptist Hospital-Bowman Gray, Winston-Salem, North Carolina—Family Medicine

Payne, Paul Andrew (Topeka, Kansas) Baylor College of Medicine, Houston, Texas—Internal Medicine/Cardiology

Philpott, Caroline Coltrane (Winston-Salem, North Carolina) Johns Hopkins Medical Center, Baltimore, Maryland—Internal Medicine

Platt, Kenneth Philip (Allentown, Pennsylvania) University of Virginia, Charlottesville, Virginia—Pediatrics

Purut, Cemil Mehmet (Charlotte, North Carolina) Duke University Medical Center, Durham, North Carolina—Thoracic Surgery

Rajagopalan, Shrinivas (Durham, North Carolina) Duke University Medical Center, Durham, North Carolina—Academic Pathology

Rehnke, Robert Dickerson (St. Petersburg, Florida) University of Miami, Miami, Florida—General Surgery, Plastic and Reconstructive Surgery

Reynolds, P. Preston (Akron, Ohio) President of American Medical Student Association, Washington, D. C.—Internal Medicine

Rider, Lisa G. (Basking Ridge, New Jersey) University of Washington, Seattle, Washington—Pediatrics

Rippy, Lee Sullivan (Dunn, North Carolina) Emory University, Atlanta, Georgia—Obstetrics and Gynecology

Robertson, Susan Markel (Broomfield, Colorado) Valley Medical Center-University of Washington Affiliates, Renton, Washington—Family Medicine

Russell, William Alton, III (Kensington, Maryland) University of Florida, Gainesville, Florida—General Surgery/Urology

Safran, Marc Raymond (Los Angeles, California) University of California, Los Angeles, California—Orthopaedic Surgery

Sane, Aneysa Christine (Vienna, Virginia) Duke University Medical Center, Durham, North Carolina—Internal Medicine

Schoeffel, Annette C. (Woodcliff Lake, New Jersey) New England Medical Center-Tufts, Boston, Massachusetts—Pediatrics, Academic or Group Practice

Schumacher, Donald James (Colts Neck, New Jersey) University of California, San Diego, California—Internal Medicine/Radiology

Schwarz, James Kendel (St. Louis, Missouri) Duke University Medical Center, Durham, North Carolina—Internal Medicine

Scialabba, Fred Anthony (Plainfield, New Jersey) Hospital of St. Raphael, New Haven, Connecticut—Transitional/Radiology

Sell, Timothy Lynn (Mocksville, North Carolina) Vanderbilt University Hospital, Nashville, Tennessee—Cardiothoracic Surgery

Shull, William Henry, Jr. (Charlotte, North Carolina) University of Pennsylvania, Philadelphia, Pennsylvania—General Surgery, Pediatric Plastic Surgery

Silverstein, Leonard (Brooklyn, New York) Columbia University, New York, New York—Pediatrics

Slaughter, Thomas Freeman (Kannapolis, North Carolina) Emory University, Atlanta, Georgia—Internal Medicine/Anesthesiology

Spaulding, Cora Ducette (Chicago, Illinois) University of Dar-es-Salaam, Dar-es-Salaam, Tanzania—Infectious Diseases/Family Medicine

Strohl, Durga (Piscataway, New Jersey) Mt. Auburn Hospital, Cambridge, Massachusetts—Internal Medicine/Ophthalmology

Taylor-Albert, Elizabeth (Carmel, Indiana) University of Oklahoma Health Sciences Center, Oklahoma City, Oklahoma—Internal Medicine

Troutman, James Leslie (Moorestown, New Jersey) University of Washington Affiliates, Seattle, Washington—Pediatrics

Uraizee, Ashfaq (Charlotte, North Carolina) University of Iowa Hospitals, Iowa City, Iowa—General Surgery

Vick, William Woodrow (Wilmington, North Carolina) Duke University Medical Center, Durham, North Carolina—Pathology

Walker, Ann Graves (Durham, North Carolina) Thomas Jefferson University, Philadelphia, Pennsylvania—Internal Medicine

Walsh, James P. (Montgomery, Alabama) Barnes Hospital, St. Louis, Missouri—Internal Medicine/Biomedical Research

Warner, Deryl Hart (Charlotte, North Carolina) Roanoke Memorial Hospital, Roanoke, Virginia—Internal Medicine/Anesthesiology

Weaver, Susan Tucker (Greenville, North Carolina) Massachusetts General Hospital, Boston, Massachusetts—Internal Medicine/Cardiology

Weingart, Jon David (Akron, Ohio) Johns Hopkins University, Baltimore, Maryland—Neurosurgery

Weischedel, Garry Richard (Camillus, New York) University of Iowa, Iowa City, Iowa—Family Medicine

Weiss, Eric Andrew (St. Petersburg, Florida) University of California, San Francisco, California—General/Plastic Surgery

Whyte, Lynne M. (Lafayette, California) Stanford University, Stanford, California—Pediatrics

Wilkes, David Craig (Dresher, Pennsylvania) Pennsylvania Hospital, Philadelphia, Pennsylvania—Surgery/Radiology

Wilson, Douglas A. (Elm Grove, Wisconsin) North Carolina Memorial Hospital, Chapel Hill, North Carolina—General Surgery
Yohay, Daniel Alan (New Hyde Park, New York) Duke University Medical Center, Durham, North Carolina—Internal Medicine
Zakris, Ellen Levine (Wayne, New Jersey) Hospital of St. Raphael, New Haven, Connecticut—Internal Medicine/Radiation Oncology



School of Nursing



The Master of Science in Nursing Program

The School of Nursing offers a program leading to the Master of Science in Nursing degree, which educates professional nurses for advanced practice in a clinical specialty or administration. Graduates are prepared to function as clinical specialists in tertiary care settings or as mid-level administrators in complex organizations and to use high technology support systems for information and patient services.

The integration of education, practice, and research undergirds the entire curriculum and the behavior of those individuals involved in the educative process.

A graduate of the program is expected to synthesize concepts and theories from nursing and related disciplines to form the basis for advanced practice;

- 2. demonstrate expertise in a defined area of advanced practice;
- 3. conduct scientific inquiry to validate and refine knowledge relevant to nursing;
- 4. demonstrate leadership and management strategies for advanced practice;
- 5. demonstrate proficiency in the use and management of advanced technology related to patient care and support systems;
- 6. analyze socio-cultural, ethical, economic, and political issues and develop strategies to influence the outcomes, and demonstrate the ability to engage in collegial intra- and interdisciplinary relationships in the conduct of advanced practice.

The curriculum is designed to provide maximum flexibility for part-time study during both day and evening hours. Students have advisers with expertise and research interests in the student's chosen area of specialization. A student may choose one of three areas in which to specialize (1) critical care—adult or child; (2) oncology—adult or child; and (3) administration of nursing services. An emphasis on scholarship and practice is maintained throughout the curriculum.

General Curriculum Design	Credits
Theoretic Bases for Advanced Practice	3
Organizational Behavior and Processes	3
Health Care Technology	3
Processes of Inquiry	6
Area of Specialization, Content, and Practice	12-15
Elective	3-6
Thesis	6
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Admission Requirements

1. Bachelor's degree with an upper division nursing major from a program accredited by the National League for Nursing.
2. Minimum of one year's experience in an area relevant to projected course of study in a clinical specialty and three years for administration.
3. Undergraduate grade point average of 3.0 on a 4.0 scale.
4. Satisfactory performance on the Graduate Record Examination.
5. Satisfactory completion of a course in descriptive and inferential statistics.
6. Eligibility to be licensed as a professional nurse in North Carolina.
7. Documentation of the acquisition of physical assessment knowledge and skills for those applicants choosing a clinical specialty.
8. Three references attesting to personal and professional qualifications, with at least two references from former employers, faculty members, or deans.
9. Personal interview; however, other arrangements may be considered when distance is a factor.

Selection will be based on the applicant's qualifications, intellectual curiosity, potential for professional growth, and contribution to the profession. Exception to any of these requirements is considered on an individual basis. Students are chosen without regard to race, religion, sex, or national origin.

Date for Application

An application for full-time study, with all supporting documents, must be submitted by 1 March for fall semester early admission. Applications for part-time study must be received by 1 March, 1 July, or 1 January.

Courses

NUR-300. Theoretic Bases for Advanced Nursing Practice. The major components of this core course—nursing, health, persons, and environment—are approached as the bases for advanced nursing practice in a complex health care center. The focus is the analysis of relevant principles, theories, and issues for the synthesis of a framework for advanced nursing practice. 3 credits.

NUR-303. Organizational Behavior and Processes. This course will examine the key concepts and elements which form the basis for understanding and analyzing the similarities and differences of groups and complex organizations. Selected theories of group and organizational dynamics, structure, process, and behaviors will be presented. 3 credits.

NUR-306. Health Care Technology. This course is designed to provide an eclectic study of technological modalities presently used to assist in the diagnosis and treatment of patients, planning and monitoring of care, management of information, and communicating among care providers. The student will be provided opportunities for the development of knowledge, intellectual skills, and clinical competence. The philosophy and ethical dilemmas inherent in the use of sophisticated equipment are examined. 3 credits.

NUR-309. Processes of Inquiry I. The focus of this course is on scientific inquiry and research methods needed for systematic investigation to expand the knowledge base relevant to nursing. Published research studies concerning health care will be critically analyzed. 3 credits.

NUR-310. Processes of Inquiry II. The emphasis of this course is on the relationships among research design, methodology, and statistical techniques. Application and interpretation of statistical procedures will be studied in relation to the most common research designs used in health care and nursing. 3 credits.

NUR-320. Critical Care Nursing I. This course presents a perspective on selected developmental theories and patient and family responses to critical illness. It covers in depth cardiovascular and respiratory problems, treatment, and technology as a basis for advanced nursing practice with adults or children. The role of the clinical nurse specialist is introduced. Both didactic and clinical experiences are included. 4 credits.

NUR-322. Critical Care Nursing II. This course focuses on the complex problems, treatment, and technology of the renal, respiratory, gastrointestinal, and neuroendocrine systems in adults and children as a basis for advanced nursing practice. Both didactic and clinical experiences are included. 4 credits.

NUR-324. Clinical Care Nursing III. This course focuses on (1) the complex problems, treatment, and technology associated with traumatic injury, burns, and substance abuse as a basis for advanced nursing practice; (2) application of selected theories and skills in the critical care environment; and (3) implementation of the multiple roles of the critical care clinical nurse specialist with special emphasis on the role of consultant. Didactic and clinical experiences and directed study are included. 4 credits.

NUR-330. Oncology Nursing I. This course provides an in-depth understanding of the pathophysiological and biobehavioral aspects of cancer across the life span. Major topics include: (1) advances in treatment (2) management of disease and treatment and (3) biopsychosocial assessment of patients. Both didactic and clinical experiences are included in the course. 4 credits.

NUR-332. Oncology Nursing II. Module 1. Economics of Cancer. This module includes (1) the functions of a comprehensive cancer center, (2) the economic issues involved in the problems of cancer, (3) demographic trends such as increased longevity with increased incidence of cancer and life style patterns, (4) cancer as a chronic illness across the life span and the potential long term sequelae of treatment and (5) policy issues related to appropriation of funds for cancer research and practice. 4 credits.

Module 2. Rehabilitation of the Patient with Cancer. This module includes: (1) the use of strategic therapy and coping skills as the patient accepts and participates in active cancer treatments, (2) biobehavioral theories of stress and disease, (3) nursing interventions to improve patient functional status, and (4) therapeutic communication and (5) the application of behavioral interventions. Both didactic and clinical experiences are included in the course.

NUR-334. Oncology Nursing III. This course focuses on: (1) the role of the clinical specialist caring for patients participating in clinical trials using technological advances in the treatment of cancer; (2) major problems resulting from cancer and its related treatment; (3) the importance of inter-intra-agency collaboration at the local, state, and national level; (4) theories of therapeutic alliance and co-decision making that increase patient participation; and (5) the development of effective coping strategies needed in caring for patients with cancer. Both didactic and clinical experiences are included in the course. 4 credits.

NUR-340. Nursing Management in Complex Organizations I. This course focuses on those structural elements, issues, and situations that are the responsibility of the mid-level nurse manager in a complex organization. Management and organizational theories are used to develop strategies for dealing with stress imposed by internal and external forces in the environment. 3 credits.

NUR-342. Nursing Management Practicum I. The student observes and applies those concepts and theories that support the integrative functions and responsibilities of a mid-level nurse manager in a complex organization. Placement in service agencies is arranged to be congruent with the student's career plans. Prerequisite: NURS-340 or concurrent. 3 credits.

NUR-344. Nursing Management in Complex Organizations II. This course focuses on the examination of processes that facilitate the achievement of a high level of quality patient care, employee productivity, and employee development in a complex environment. Leadership theories and concepts are used to analyze the adaptive mechanisms needed by the mid-level nurse manager in a dynamic and technologic environment. 3 credits.

NUR-346. Nursing Management Practicum II. This practicum experience provides the student with the opportunity to apply knowledge and skills in the management of select processes within a dynamic and technologic environment. Identification of strategies, intervention, and evaluation of various approaches to nursing management are investigated. Placement in service agencies is arranged to be congruent with the students' career plans. Prerequisite: NURS-344 or concurrent. 3 credits.

NUR 348. Budget Planning and Financial Management. This course focuses on the knowledge and skills required by the mid-level nurse manager for budget planning and fiscal management of a defined unit or department. Health care economics, technology, standards of practice, staffing, and patient classification are examined from a budgetary perspective and within an environment of regulations and constraints. 3 credits.

NUR-350. Thesis. 6 credits.

NUR-360. Educational Concepts of Teaching and Learning. This course will focus on the key concepts and principles which form the rationale for understanding the teaching and learning process. Educational theories of teaching and learning, situations, and issues will be used to develop instructional strategies for the advance nursing practice roles. 3 credits.

NUR-399. Select Topics or Independent Study. Students select a topic of professional interest from within the specialty area or in support of the specialty area, to be studied with a faculty member. Specific objectives, evaluation methods, and other requirements are determined prior to registering for the course of study. 1-3 credits.

Electives. Courses to be offered as electives will be developed by the nursing faculty in addition to courses offered by other departments and schools within the university. Elective courses are to be supportive of the area of specialization. 3-6 credits.

For additional information, please contact the Office of the Dean, Duke University School of Nursing, Box 3322, Durham, North Carolina 27710, (919) 684-3786.



The Allied Health Programs



The Allied Health Programs

There are several health-services educational programs offered at the Duke University Medical Center that are neither medicine nor nursing. Every effort is made to keep each of these allied health programs closely related to the Medical School departments whose field they serve.

Several of today's allied health occupations require less than the baccalaureate level of education. Although the Duke University Medical Center has several such programs, they are often taught in junior colleges, technical institutes, or community hospitals. Such training programs in the latter institutions can frequently benefit from resources generally available only from medical centers, e.g., (1) in choosing programs appropriate to their resources and needs, (2) in developing articulated curricula, (3) in upgrading or attracting competent faculty, and (4) in arranging meaningful affiliations between the educational and the clinical care institutions that are required for many of these programs. The programs arrange, whenever possible, to help provide such resources to institutions located within the adjacent geographic region.

Programs in hospital administration and dietetics were initiated at the Medical Center in 1930. Programs in several disciplines dealing primarily with the laboratory aspects of clinical medicine began soon afterward. Due to marked advances in the field of medicine, new allied health programs were developed in the early 1960s to assist in the many medical specialties. Today there are approximately 300 students enrolled in Duke University allied health programs.

Admissions

Admissions to all Duke University educational programs are reviewed by an appropriate admissions committee. Students matriculating in the various allied health programs must meet the admission standards of that program.

Resources for Study

All of the study facilities available to medical students are available to allied health students. See descriptions for Library/Communications Center, the Thomas D. Kinney Central Teaching Laboratory and Division of Audiovisual Education which may be found in a foregoing portion of this bulletin.

Several of the allied health programs have affiliations with other hospitals and medical institutions for clinical instruction.

Student Life

Living Accommodations. Because of the shortage of residential space, students enrolled in allied health certificate programs are not eligible for student housing. The Department of Housing Management maintains a listing of rental apartments, rooms and houses provided by property owners or real estate agencies in Durham. These listings are available in the department only; during the summer an assistant is available to answer questions and aid students in their attempt to obtain housing off campus. Information on commercial complexes in the Durham area may be obtained by writing to the Off-Campus Housing Office, 217 Anderson Street, Durham, NC 27705. Except for assuring that owners sign a statement of nondiscrimination, off-campus property is in no way verified and neither the University nor its agents negotiate between owners and interested parties. The search for accommodations should begin as soon as possible after acceptance. A visit of two or three days will allow you the opportunity to make use of the off-campus service and to inspect personally the availabilities.

Dining Facilities. Duke University Food Services (DUFS) operates a variety of dining facilities, including cafeterias, snack bars, restaurants, salad bars, and more. Students may make food purchases in DUFS establishments with cash, or they may choose to open a pre-paid account. Information about the various types of accounts is available from the Auxiliary Services Contract Office, 024 Union West, Duke University, Durham, North Carolina 27706 919/684-5800.

Cafeterias operated by the hospital are available both in the medical center and the Veterans Administration Medical Center.

Student Financial Aid. Duke University recognizes the responsibility of students and their families to provide funds according to their ability to achieve the educational objective. Students are encouraged to pursue every available source of support through their local and state student assistance programs.

All programs are approved for veterans education benefits (G.I. bill) for those who are eligible. Some of the programs have limited student support available through stipends or special scholarships.

Financial aid is available through Duke in limited amounts in the form of loans. When all institutional funds are pooled, the amount available to a totally needy student is inadequate to meet the school's recognized costs. Duke University is a lender under the Federally Insured Guaranteed Student Loan Program. A Financial Aid Form (FAF) or a Graduate and Professional Schools Financial Aid Service (GAPSEAS) form from applicants and their parents (and spouse, if applicable) is required in addition to the Duke University Financial Aid Application. A copy of the student's (and spouse's, if applicable) federal income tax return for the previous taxable year is required. In the case of the dependent student, a copy of the parent's federal income tax return for the last taxable year is also required. Duke University reserves the right to decline to approve loan applications for those applicants who do not have a satisfactory credit history. U.S. citizenship or permanent residence visa is required of all students receiving loans through the school.

It is the responsibility of recipients of financial aid to keep the Medical Center Office of Financial Aid informed of any outside financial assistance they may receive. It must be understood that Duke reserves the right to reconsider its offer of financial assistance in the event of a major outside award to a recipient. No financial aid funds may be used during a period when the recipient is not involved with work toward the degree or certificate. Part-time or special students are not eligible for financial aid.

Students who have been accepted for matriculation routinely receive financial aid applications. Annual reapplication is required of all financial aid recipients.

Pell Grant (formerly BEOG) is a federally funded grant for students with financial need who have not earned a baccalaureate degree and are enrolled in any postsecondary educational program. To apply the applicant completes a Financial Aid Form (FAF)

which may be obtained from a high school guidance counselor or or any financial aid office.

North Carolina Student Incentive Grant (NCSIG) is available to residents of North Carolina who are enrolled in any postsecondary educational program in North Carolina. The applicant must demonstrate substantial financial need and must not have earned a baccalaureate degree. Application deadline is 1 March for the following academic year. To apply the applicant completes a Financial Aid Form (FAF) requesting that the information be sent to College Foundation, Inc., 1307 Glenwood Avenue, Raleigh, North Carolina 27605. FAFs may be obtained from a high school guidance counselor, or financial aid office.

North Carolina Legislative Tuition Grant is a direct grant of \$1,000 from the state to each North Carolinian enrolled in a private educational institution in North Carolina who is studying toward the first baccalaureate degree. No application is required.

North Carolina Student Loan Program for Health, Science, and Mathematics. These loans provide financial assistance to North Carolina residents who demonstrate need as determined by the board. Loans are available for study in the medical fields, mathematics, and science programs that lead to a degree. The applicant must be a domiciliary of North Carolina and accepted as a full-time student in an accredited associate, baccalaureate, master's, or doctoral program leading to a degree. Loan recipients in professional or allied health program may cancel their loans through approved service in shortage areas, public institutions, or private practice. Medical students may receive up to \$7,500 per year for each of the four years; master's degree students are eligible for two loans of up to \$5,000 each; bachelor's degree students are eligible for three loans of up to \$4,000 each. For application forms and more information write: Executive Secretary, Board for Need-Based Student Loans, 116 West Jones Street, Raleigh, North Carolina 27605, or telephone (919) 733-2164.

Every effort will be made to assist the student with tuition and living expenses within the framework of school policies which may be in effect at the time. However, as funds are limited, prior indebtedness will not be given favorable consideration as part of the student's budget. A financial aid brochure and student budget for each allied health program are available, upon request, in the spring of each year. Any applicant having further questions may write to the Administrator, Financial Aid, 126 Davison Building, Box 3005, Duke University Medical Center, Durham, North Carolina 27710.

Student Health Service. Student health service, health insurance, and counseling and psychological services, fully described in an earlier portion of this bulletin are available to all allied health students.

Athletic Events. All students paying the full Duke University undergraduate tuition are issued Duke University identification cards and may attend all home intercollegiate athletic contests on a first-come, first-served basis. Graduate students and those enrolled in certificate programs may purchase a book of tickets for regular season home football and basketball games. All tickets are sold on a first-come, first-served basis. The ticket office is located in Cameron Indoor Stadium.

Judicial System and Regulations. Duke University expects and requires of all its students full cooperation in developing and maintaining high standards of scholarship and conduct. Each student is subject to the rules and regulations of the University which are currently in effect or which are, from time to time, put into effect by the appropriate authorities of the University. At the same time, the individual is responsible for decisions and choices within the framework of the regulations of the community as Duke does not assume in loco parentis relationships.

Any student, in accepting admission, indicates a willingness to subscribe to and be governed by these rules and regulations and acknowledges the right of the University to take such disciplinary action, including suspension or expulsion, for failure to abide by these regulations or for other conduct adjudged unsatisfactory or detrimental to the

University. A copy of the Allied Health Judicial System including a code of ethics, rules of conduct, and judicial procedures will be provided each student.

Fees for Transcripts. Requests for transcripts of academic records should be directed to the Office of the Medical Center Registrar. A minimum fee of \$2, payable in advance, is charged for each copy.

Student Health Fee. All regular full-time students and part-time degree candidates (undergraduate, graduate, and professional) are required to pay the health fee that is nonrefundable after the first day of classes in the semester. The student health fee entitles the student to outpatient treatment through the Student Health Service, inpatient treatment in the Infirmary, and use of Counseling and Psychological Services. The health fee is not to be confused with the Duke Student Accident and Sickness Insurance (the premium for this insurance is minimized due to the existence of the Student Health Services) which covers a large number of medical costs above and beyond the treatment available through the Student Health Services. The identification of a separate student health fee in no way changes the policy concerning the Student Accident and Sickness Insurance. Student Health brochures are available in the Bursar's Office and in the Student Health Service Clinic.

Student Accident and Sickness Insurance. At time of matriculation, students must provide proof of coverage under an accident and sickness insurance policy, accept responsibility for payment of any medical expense, or purchase the Duke Student Accident and Sickness Insurance policy. This insurance policy provides protection twenty-four hours per day during the twelve-month term of the policy of each student insured. Students are covered on and off the campus, at home, or while traveling between home and school and during interim vacation periods.

Refunds

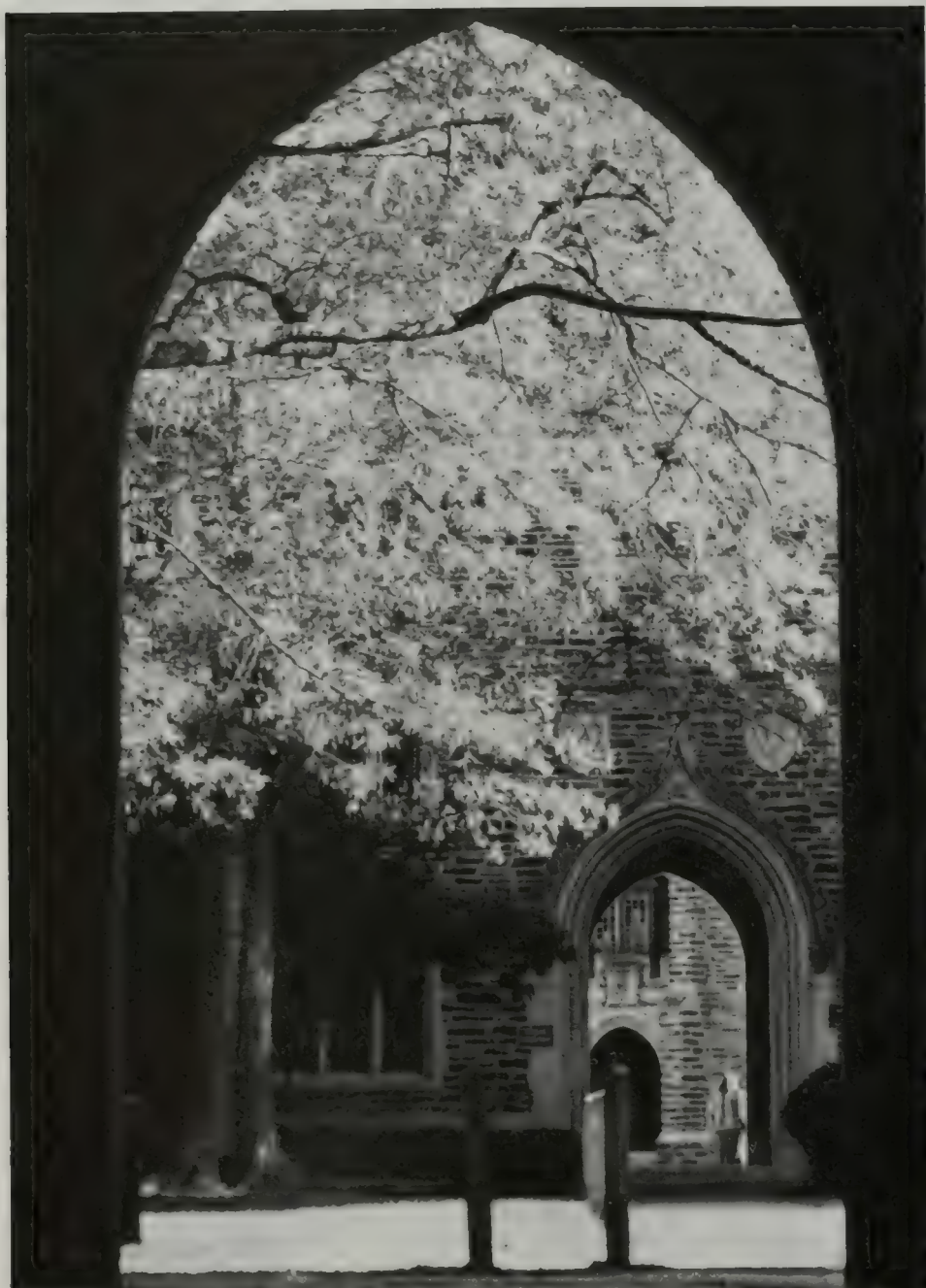
If a student withdraws, tuition is refunded according to the following schedule:

Withdrawal from the Baccalaureate Program	Refund
Before classes begin	Full amount
During first or second week	80%
During third to fifth week	60%
During sixth week	20%
After sixth week	None
Withdrawal from Certificate Programs*	Refund
Before classes begin	Full amount
During first week	80%
After first week of classes	None

*Course fees for students in certificate programs are payable on a yearly basis.



*Bachelor of Health Science
Degree Program*



Grading and Grade Requirements

Final grades on performance in academic work are sent to students after the examinations at the end of the fall and spring semesters.

Passing Grades. Passing grades are *A*, exceptional; *B*, superior; *C*, satisfactory; and *D*, low pass. A passing grade may be modified by a plus or minus. A *Z* may be assigned for the satisfactory completion of the first semester of a two-course sequence. This permits an instructor to assign an earned grade for the entire year during the grading period for the second course of the sequence.

The D Grade. Although the *D* grade represents low pass, no more than two courses passed with *D* grades may be counted among the thirty-two courses required for graduation.

Failing Grades. A grade of *F* or *U* (see pass/fail option below) indicates that the student has failed the course, which is recorded on the student's record. If the course is taken again, a second entry of the course and the new grade earned is made on the record, but the first entry is not removed.

Pass/Fail Grading Option. With the consent of the instructor and program director, a student may choose to be graded on a pass/fail basis in one elective course each semester or summer session.

A student enrolling in a course on a pass/fail basis completes all the work of the course but receives either a pass, (*P*), or fail, (*U*), in lieu of a standard grade. After the first two weeks of classes in any semester, no student may change to or from a pass/fail basis. A pass grade may not subsequently be converted to a regular letter grade nor may the course be retaken on a regular credit basis.

Grades When Absent from Final Examination. In all cases in which a student is absent from a final examination, an *X* is received instead of a final grade. If the student does not present an acceptable explanation for the absence to the Office of the Dean within forty-eight hours after the scheduled time of the examination, the *X* is converted to an *F*. If the absence is excused by the Dean the student arranges with the instructor for a makeup examination. An *X*, not cleared by the end of the semester following the examination missed, is converted to an *F*. See the section on Final Examinations and Excused Absences.

Grades for Incomplete Work. If because of illness or other emergency a student's work in a course is incomplete, an *I* may be received for the course instead of a final grade. Incomplete courses must be completed before the close of the succeeding semester; otherwise, the *I* is converted to an *F*. Seniors must complete all courses before graduation. A student whose work is incomplete and who is also absent from the final examination receives an *X* for the course.

For the purpose of determining if a student satisfies continuation requirements, an *I* is counted as failing to achieve satisfactory performance in that course.

Graduation and Continuation Requirements

Continuation Requirements. A student must achieve a satisfactory record of academic performance and make satisfactory progress toward graduation each semester. To remain in the University a student must not fail two or more courses in any semester. A student who, for any special reason, has been permitted to enroll for three or fewer courses must pass all courses.

Students are reminded that in cases where continuation is in question, incomplete work in any course is counted as a failure to achieve satisfactory performance in that course. Such courses must be completed in time for final grades to be submitted to the Registrar no later than the day preceding the opening of the spring semester or 15 June in the summer. Any student excluded under the provisions of this regulation may request to have the case reviewed by the Dean of Medical Education.

Requirements for Degree. To be graduated a student must pass a minimum of thirty-two courses (including the sixteen courses required for admission) and all courses prescribed in the program of study. Of the courses required for graduation, no more than two courses with *D* grades will be accepted.

Residence Requirements. At least sixteen semester-courses must be completed satisfactorily at Duke. This must include the final four semesters.

Commencement

Graduation exercises are held once a year in May, when degrees are conferred on, and diplomas issued to those who have completed requirements by the end of the spring semester. Those who complete degree requirements by the end of a summer term or the end of a fall semester become eligible to receive diplomas dated 1 September or 30 December, respectively. There is a delay of about one month in the mailing of September and December diplomas because the diplomas are mailed after final approval by the Academic Council and the Board of Trustees. Any persons who receive diplomas dated 1 September or 30 December may return for the commencement weekend and participate in the graduation exercises in May following the date of the diploma.

Eligibility for Academic Honors

To determine eligibility for academic honors, only letter grades earned at Duke, with the exception of the *P* (pass) grade, enter into the calculation of the average.

Graduation Honors. Full-time or part-time students who earn the following averages for all work taken at Duke are graduated with honors: a 3.3 average earns a degree *cum laude*; a 3.6 average earns a degree *magna cum laude*, and an average of 3.8 or above earns a degree *summa cum laude*.

Course Information

The unit of credit for academic work is the semester-course. Double-courses and half-courses are recognized.

Transfer Credit. Duke credit may be granted for course work satisfactorily completed at other regionally accredited, degree-granting institutions. Courses in which grades of less than C have been earned are not accepted for transfer credit. Semester-course credit awarded at Duke for satisfactorily completed courses cannot, of course, be directly equated with semester-hour or quarter-hour credits. A semester's work accepted as a normal course load by the other institution transfers as a block of four course units at

Duke, provided the courses taken at the other institution are acceptable by Duke as Duke course equivalents or electives. Ordinarily, transfer students will not be awarded more than four course units for one semester's work unless they have satisfactorily completed more than the normal course load at the institution from which they transferred. All courses approved for transfer credit are listed on the student's permanent record at Duke (unless the student has received a degree) but grades earned in such courses are not recorded. Courses taken at other institutions are evaluated by the Medical Center Registrar.

Students who transfer to Duke may receive credit for a maximum of two years of work at other institutions of approved standing. No credit is given for work completed by correspondence, and credit for no more than two semester-courses is allowed for extension courses.

Course Load and Eligibility for Courses. The normal and expected course load each semester is four to five semester-courses. To take fewer than four or more than five semester-courses in any semester, a student must have the approval of the program director and the Dean. No student, however, may take more than six courses in any semester.

Course Audit. With the written consent of the instructor and the program director, a full-time degree student is allowed to audit one or more courses in addition to the normal program. After the first two weeks of classes in any semester, no student classified as an auditor in a particular course may take the course for credit, and no student taking a course for credit may change classification to an auditor. A student may not repeat for credit any course previously audited. Auditors submit no daily work, take no examinations, and receive no credit for courses.

Course Changes after Classes Begin. Students, with the approval of the program director, may drop and add courses during the first two weeks of classes. Courses added during the second week of classes require the approval of the appropriate instructor in addition to that of the program director.

Students may drop a course without penalty until the time midsemester grades are assigned if they are clearly carrying a course overload. Factors such as poor health or necessary outside work are also considered in permitting withdrawal from courses without penalty. A *W* is entered on the permanent record in lieu of a grade in all cases where withdrawal without penalty is approved. After the time limit has expired, withdrawal from any course will ordinarily result in a grade of *F*. Courses discontinued prior to midsemester without approval will also be assigned an *F*.

Class Attendance and Excused Absences

Responsibility for class attendance rests with the individual student. Students are expected to attend classes regularly and punctually and must accept the consequences of failure to attend. An instructor is privileged to refer students to the Dean for suitable action if, in the opinion of the instructor, their work or that of the class suffers because of absences. When excessive absences result in a student's failure to carry a normal course load, the Dean, after a conference with the student, will determine whether the student may continue enrollment in the college.

Absences from required classes and tests ordinarily are excused only for illnesses certified by a proper medical official of the University, and for authorized representation of the University in out-of-town events. Officials in charge of groups representing the University in such events are required to submit names of students to be excused to the Office of the Dean forty-eight hours before absences are to begin.

Final Examinations and Excused Absences

Customarily, an examination is the final exercise in an undergraduate course, but it is understood that not all courses profit from this process. Therefore, unless departmental policy stipulates otherwise, the conduct of the final exercise is determined by the instructor, except that a final written examination may not exceed three hours in length and a final take-home examination may not require more than three hours in the actual writing.

Absences from final examinations are excused by the Dean only in exceptional circumstances, such as illness certified by a medical official of the University or other conditions beyond the control of the student. A student who misses a final examination must notify the Office of the Dean within forty-eight hours after the scheduled time of the examination. Failure to so notify and to present an acceptable reason for absence from the examination will result in the student's receiving an *F* in the course.

Changes in Status

Withdrawal and Readmission. A student who wishes to withdraw from the University must give official notification to the Dean. Withdrawals at student initiative prior to the Thanksgiving recess in the fall semester or prior to 15 April in the spring semester are coded as voluntary, and a *W* is entered in lieu of a grade for each course. Voluntary withdrawals after these dates are permitted only in the event of emergencies beyond the control of the student.

Applications for readmission are made to the Medical Center Registrar. Each application is reviewed by the admissions committee of the program to which the student applies. A decision is made on the basis of several criteria including the applicant's academic record at Duke, the prospects of completing requirements for graduation, the student's citizenship record at Duke, evidence of increasing maturity and discipline, the degree of success attendant upon activities during the time away from Duke, and finally the applicant's relative standing among the group of students applying for readmission.

Leave of Absence. A student in good standing may apply in writing to the Dean to take a leave of absence for one or two semesters. The application must come before the end of the fall semester for a leave of absence during the spring semester, and before 15 July for a leave of absence during the fall semester. If the leave is approved, the student must keep the Dean informed of any change of address.

Full-Time and Part-Time Degree Status. Normally, undergraduate students who are candidates for degrees are expected to enroll for a normal course load each semester. A student who needs to change from full-time status, or from part-time to full-time status, must have the approval of the program director and the Dean. For special reasons approved by the program director and the Dean, a full-time degree student who is qualified to continue may register in a part-time degree status for no more than two courses.

Admission

Students seeking admission to the Bachelor of Health Science degree program must have completed two years of study at an accredited institution. In addition, they must have a minimum of sixteen course equivalents (sixty semester-hours/ninety quarter-hours) of transferable credit including at least one course in English, three in natural science, three in social sciences or history, and one in humanities. Additional requirements are listed in the description of the program.

Other Information

Release of Student Records. No confidential information contained in student records (academic or otherwise) is released to non-University persons or to unauthorized persons on the campus without the consent of the student. Consent is evidenced by each student's signing a form which authorizes the release of personal data. The form may provide for the release of information to one or more persons or agencies only, or it may be a blanket release. Blank forms to authorize or revise the permission are available in the office of the program directors.

Identification Cards. Undergraduate students are issued identification cards which they should carry at all times. The cards are the means of identification for library privileges, University health services, athletic events, and other University functions or services open to them as University students. Students will be expected to present their cards on request to any University official or employee.

The cards are not transferable, and fraudulent use may result in loss of student privileges or suspension. A student should report the loss of this card immediately to the Registrar's office. The cost of a new identification card is \$5.

Payment of Bursar Accounts for Fall and Spring. Monthly invoices for tuition, fees, and other charges will be sent by the Bursar's office and are payable by the invoice due date; no deferred payment plans are available. As a part of the agreement of admission to Duke University a student is required to pay all invoices as presented. If full payment is not received, a late payment charge as described below will be assessed on the next invoice and also certain restrictions as stated below will be applied.

Late Payment Charge. If the total amount due is not received by the invoice due date, the next invoice will reflect a penalty charge of 1¼ percent assessed on to the past due balance. The past due balance is defined as the previous balance less any payments and credits received on or before the due date and also any student loan memo credits, related to the previous balance, which appear on the invoice. The amount of the 1¼ percent penalty charge will be the same regardless of the number of days payment is received after the due date.

Restrictions. An individual will be in default of this agreement if the total amount due on the student invoice is not paid in full by the invoice due date. An individual who is in default will not be allowed to register for classes, receive a transcript of academic records, have academic credits certified, be granted a leave of absence, or receive a diploma at graduation. In addition, an individual in default may be subject to withdrawal from school.

Tuition and Fees*

Estimated Expenses for an Academic Year. Certain basic expenditures such as tuition, board, and room are to be considered in preparing a student's budget. For the Bachelor of Health Science program the estimated expenses are:

Tuition	\$8,250 first year; \$7,775 second year*
Books, uniforms, and supplies	\$900 per year
Food	\$220 per month
Laboratory Fee	\$250
Lodging	\$265 per month
Student Health Fee	\$119 per semester
Student Accident and Sickness Insurance	\$225 per year (single) \$632 per year (married)
Miscellaneous (travel, laundry, clothing, etc.)	\$220 per month

*These are estimated figures only. Tuition and fees are subject to change without notice.



Registration Fees and Deposits. On notification of acceptance, baccalaureate degree students are required to pay a nonrefundable first registration fee of \$30. Students in the Physician Assistant Program are required to make a deposit of \$75. The deposit will not be refunded to accepted applicants who fail to matriculate. For those who do matriculate, the deposit is applied to the cost of tuition.

Late Registration. Students who register in either semester at a date later than that specified by the University must pay to the Bursar a fee of \$25.

Part-time Students. In the regular academic year, students who register for no more than two courses in a semester are classified as part-time students. Part-time students are charged at the following rates: One course, \$740; half- course, \$370. Registration for more than two courses requires payment of full tuition.

Auditors. Auditing of one or more courses without charge is allowed students paying full fees, provided that the consent of the instructor is obtained.

Physician Assistant Program



Duke University Medical Center awards a Bachelor of Health Science degree to students who complete the Physician Assistant Program.

Physician Assistant Program

PHYSICIAN ASSISTANT PROGRAM ADMINISTRATION

Chairman: George R. Parkerson, Jr., M.D., *Department of Community and Family Medicine*
Program Director: Reginald D. Carter, Ph.D., PA, *Associate Professor of Community and Family Medicine*
Medical Director: Michael Hamilton, M.D., *Assistant Professor of Community and Family Medicine*
Assistant Program Director: Patricia A. McKelvy, PA-C, MPA, *Clinical Associate*
Clinical Coordinator: Philip Price, PA-C, *Clinical Associate*
Educational Coordinator: J. Victoria Scott, PA-C, *Clinical Associate*
Surgical Coordinator: Paul Hendrix, PA-C, *Medical Research Associate*
Pediatrics Coordinator: Mary Austin, PA-C
Minority Affairs Coordinator: Lovest T. Alexander, Jr., PA-C

TEACHING STAFF AND FACULTY

Michael A. Hamilton, M.D., *Anatomy and Physical Diagnosis*; Reginald D. Carter, Ph.D., PA, *Medical Sciences*; Patricia A. McKelvy, PA-C, *Physical Diagnosis, Patient Assessment, Perspectives on Health*; J. Victoria Scott, PA-C, *Patient Assessment, Clinical Medicine, Physical Diagnosis, Perspectives on Health, Geriatrics*; Philip Price, PA-C, *Patient Assessment, Perspectives on Health, Surgery (ACLS), Physical Diagnosis*; Katherine Halpern, PA-C, *Anatomy and Physical Diagnosis*; Max Isbell, PA-C, *Anatomy and Physical Diagnosis*; Paul Hendrix, PA-C, *Anatomy, Fundamentals of Surgery*; Mary Austin, PA-C, *Introduction to Pediatrics*; Joseph Kertesz, M.A., *Behavioral Medicine*; Suydam Osterhout, M.D., *Microbiology*; Margaret Schmidt, MT(ASCP)SH, M.A.T., *Medical Technology*; Iris W. Long, MT(ASCP), M.A.T., *Laboratory Sciences*; Caroline Chiles, M.D., *Radiology*; Joseph C. Greenfield, M.D., *Professor and Chairman, Department of Medicine, and Staff, Internal Medicine*; David Sabiston, M.D., *Professor and Chairman, Department of Surgery, and Staff, Surgery*; Samuel Katz, M.D., *Professor and Chairman, Department of Pediatrics, and Staff, Pediatrics*; Bernard J. Carroll, Ph.D., *Professor and Chairman, Department of Psychiatry, and Staff, Psychiatry and Behavioral Sciences*; E. Harvey Estes, M.D., *Family Medicine*; George R. Parkerson, Jr., M.D., *Community Medicine*. In addition to the above, the program calls upon teaching resources of affiliated community practitioners and members of the Departments of Medicine, Surgery, Obstetrics/Gynecology, and Pediatrics.

In 1965 Duke University Medical Center began an innovative program designed to prepare highly educated and well-trained assistants for physicians. The program originated when clinicians at the Medical Center realized that they could enhance their productivity by safely and effectively delegating many of their tasks and responsibilities to nonphysicians, primarily ex-military corpsmen with previous health-related education and experience. Dr. Eugene A. Stead, Jr., then Chairman of the Department of Medicine at Duke, recognized the potential of the corpsmen experience and concluded that paramedical personnel might be trained to provide primary health care under the

supervision of a physician. In developing the Department of Community and Family Medicine, Dr. E. Harvey Estes, Jr. foresaw that midlevel practitioners would help increase consumer access to health services, and extend the time and skills of the physician in providing comprehensive health care.

The physician assistant possesses a broad understanding of medicine and health care. Men and women are chosen for the program on the basis of their humanistic perspective, demonstrated commitment to providing health care, and their academic potential.

On completion of the two-year program, graduates are prepared to assist in the evaluation and management of common health problems, including both acute problems and chronic illnesses such as hypertension and diabetes. Recognizing the intrinsic relationship between emotional and physical health, the program stresses competence in the exploration of psychosocial concerns. Graduates are expected to have a basic fund of knowledge pertaining to health needs of infants and children, young and middle-aged adults, and geriatric patients. Physician assistants also provide patient care services such as diagnostic and therapeutic procedures, wound suturing, cast application, and basic laboratory procedures.

Upon successful completion of the program, Duke University Medical Center awards the student a Bachelor of Health Sciences degree and a Physician Assistant Certificate.

Program of Study. The curriculum is twenty-three consecutive months in duration and is designed to provide an understanding of the rationale for skills used in physical diagnosis and problem assessment. It focuses primarily upon the common problems seen in ambulatory care settings, so that the student is able to utilize and understand the various diagnostic, therapeutic, and supportive measures used by the primary care physician. The first ten months are devoted to the basic medical and behavioral sciences and the remaining thirteen months to clinical training in a variety of practice settings. The rigorous curriculum requires people who have had college level education and experience in a health-related discipline.

The preclinical curriculum is integrated in such a way as to introduce the student to medical sciences as they relate to clinical problems. Learning strategies include self-instructional study guides, teaching patients, lectures, seminars, laboratories, and small-



group encounters. Clinical medicine and patient evaluation are taught using the problem-oriented medical record format. The psychosocial aspects of clinical practice are emphasized as well as the physical aspects of disease processes.

As part of the clinical practicum students are required to take rotations in inpatient medicine, surgery/emergency services, family medicine, pediatrics, obstetrics/gynecology, and behavioral medicine. The final ten weeks of clinical training is spent away from Duke in a community setting.

Because the clinical teaching is carried out in many practice settings, students should plan on being away from the Durham area for part of their clinical experience.

Curriculum. Before proceeding into the clinical phase of the curriculum, students must satisfactorily complete the following:

Preclinical Schedule

		Course Weight
<i>Fall Semester</i>		
CFM 102	Basic Medical Sciences	1
CFM 103	Clinical Medicine	1
CFM 112	Anatomy and Physical Diagnosis	1
CFM 114	Patient Assessment I	1
PTH 115	Clinical Diagnostic Procedures	1
		<hr/> 5
<i>Spring Semester</i>		<i>Course Weight</i>
CFM 104	Clinical Medicine II	1½
CFM 101	Perspectives on Health	½
CFM 115	Patient Assessment II	½
CFM 106	Behavioral Aspects of Medicine	1
MIC 101	Introductory Microbiology	½
SUR 101	Fundamentals of Surgery	1
		<hr/> 5
<i>Summer Term 1</i>		<i>Course Weight</i>
CFM 105	Introduction to Pediatrics	1

After satisfactory completion of all basic science courses, students must complete the following:

Clinical Schedule

MED 150. General Medical Inpatient Service	2 courses	8 weeks
SUR 150. General Surgery	1 course	4 weeks
SUR 151. Outpatient/Emergency Surgical Service	1 course	4 weeks
OBG 150. Obstetrics and Gynecology	1 course	4 weeks
PED 150. Pediatrics	1 course	4 weeks
CFM 151. Family Medicine	1 course	4 weeks
CFM 152. Behavioral Medicine	1 course	4 weeks
		<hr/>
		8 courses 32 weeks

In addition to the above courses required for the B.H.S. degree, students must complete:

Four elective courses required for certificate	16 weeks
	Subtotal: 48 weeks
Final Preceptorship†	6 weeks
	<hr/> Total: 54 weeks

†This rotation is taken only during the summer of the last year. Prerequisites for admission.

Prerequisites for Admission. To be eligible for the Bachelor of Health Sciences program, applicants must complete by 15 January (the application deadline) 60 semester-hours of college credit from an institution whose credits are transferable to Duke University and which include one English course, one humanities course, three courses in the social sciences, and three courses in the natural sciences (two of which must be chemistry and biology). Of equal importance to the academic requirement is a minimum of six

months of health care experience. This experience should involve direct patient contact and may be gained as a nurse, patient care assistant, military corpsman, or in other related fields such as medical technology, physical therapy, emergency medical technology, and counseling in health-related fields.

Application Procedures. Application materials and course bulletins are mailed to prospective applicants from 1 June through 15 December each year. Applications are accepted by the University no earlier than 1 September and no later than 15 January for the new class which enters in late August each year. Applications must contain:

1. a completed Duke University Medical Center Allied Health application form, including a nonrefundable fee of \$30;
2. official transcripts from all colleges or other academic institutions attended;
3. Scholastic Aptitude Test Scores of the College Entrance Examination Board, if already taken;
4. three letters of recommendation, to include one from an immediate supervisor and one from a physician with whom the applicant has worked;

Selection Factors. The program has a specific interest in enrolling students from diverse social, ethnic, and educational backgrounds. Emphasis is placed upon personal maturity, quality of health care experience, dedication to the health field, and intellectual capacity. Information submitted by each applicant is carefully reviewed by the Committee on Admissions, and selected applicants are invited to Duke University for personal interviews. These interviews take place in mid-January, mid-February and mid-March of each year; students are chosen from among those interviewed. All applicants will be notified by 15 April regarding admission to the program. Requests for application forms and information should be directed to the Coordinator of Admissions, Physician Assistant Program, P.O. Box CFM-2914, Duke University Medical Center, Durham, North Carolina 27710.

Financial Aid. The financial aid office works closely with students to secure loans. Due to the limited amount of money available, requests are considered individually and approved on the basis of financial need. Part-time employment for students is available in many areas of the Medical Center. Frequently such employment may net students about \$200 per month and yet not jeopardize their education. Students must comply with the academic schedule and are prohibited from working more than twenty hours per week.

Courses of Instruction

Courses numbered from 150 through 189 either list specific prerequisites or have as prerequisite the completion of the junior year in one of the programs.

Double numbers separated by a hyphen indicate that the course is a year course and must normally be continued throughout the year if credit is to be received.

COMMUNITY AND FAMILY MEDICINE

CFM 102. Basic Medical Sciences provides students the basic facts, concepts, and principles that are essential to understanding the fundamental mechanisms of human physiology, pathology, pharmacology, and nutrition. Upon completion of clinically-related problems and to advance into the clinical medicine course with sufficient knowledge to understand the underlying principles of the etiology, management, and prevention of various systemic disease processes. *Carter and Hanlon*

CFM 103-104. Clinical Medicine presents basic material around which most other courses are organized. The course is organized into units proceeding through body systems, and combines material from anatomy, physiology, pharmacology, pathology, radiology, nutrition and clinical medicine. Units are divided into smaller modules which are

objective-oriented, and learning is evaluated by unit tests addressed to these objectives. Students read reference material individually and attend lecture presentations during which basic scientists, practicing physicians and physician assistants explore important content areas in more depth. Emphasis is placed on topics pertinent to evaluation of health problems at the primary care level. *Scott, Carter, and Chiles*

CFM 105. Introduction to Pediatrics. The purpose of this course is to introduce students to clinical problems commonly seen in ambulatory pediatrics. Through lectures and demonstrations, students learn basic concepts and practical approaches to the maintenance of health and the management of illness in infants and children. In small group sessions, students develop skills necessary to assess the normal development of children and to define an appropriate data base for specific clinical problems. Physical assessment and diagnostic techniques are demonstrated. The psychological, pharmacological, and nonpharmacological management of pediatric patients are discussed. This course is taught by members of the Department of Pediatrics. One course. *Austin and staff*

CFM 106. Behavioral Aspects of Medicine. This course presents an extensive view of human behavior while concurrently developing skills that facilitate interpersonal awareness and psychological intervention. *Kertesz*

CFM 112-113. Anatomy and Physical Diagnosis. This course is taught by the program staff and clinicians from the Department of Surgery and Medicine. Students learn functional and applied anatomy as it applies to physical diagnosis and common clinical findings. Teaching methods for the anatomy component of the course include lectures, cadaver prosections, and audiovisual materials. Physical diagnosis is taught primarily through supervised practice of physical diagnosis skills. One course. *Hendrix, Carter, Scott, Price, McKelvey, Halpern, Isbell, and staff from the Departments of Medicine and Surgery*

CFM 114-115. Patient Assessment. This course is taught by the program staff and clinicians from the Department of Medicine. Students learn and practice skills in medical interviewing and physical assessment, clinical decision making, and the accurate and efficient recording and presentation of clinical information. Teaching methods include lectures, small group seminars, role playing, and the supervised examination of patients. One and one half courses. *Scott, Price, McKelvey, and staff from the Department of Medicine*

CFM 150. General Community Medicine. During this rotation students spend time with physicians in community practice, observing and participating in both office-based and hospital care. Students gain experience in doing both problem-specific and complete evaluations and through follow-up visits have an opportunity to monitor the results of therapy. Students learn to appreciate the impact of a patient's total environment on their health status. One or two courses. *Staff*

CFM 151. Family Practice. A four-, or eight-week clinical experience surveying the components of family practice, including emotional conflicts and interpersonal relationships with the patient and other members of the family unit. Through experience in interviewing and examining patients, the student is exposed to the multi-faceted approach of understanding and treating physiologic and sociologic components of disease processes. In this situation, an understanding of the common diseases treated by primary care practitioners and the aspects of the unique relationship a physician's associate experiences with private patients, their physician, and other health team members is developed. One or two courses. *Warburton and staff*

CFM 152. Behavioral Medicine. A four-week clinical experience in behavioral sciences. Four days each week are spent at a facility involved in the treatment of behavioral disorders (i.e., community psychiatry, inpatient psychiatry, outpatient psychiatry, alcoholism treatment, etc.). Students learn and participate in the diagnosis and treatment of patients cared for at that site. One day each week is spent in a seminar reviewing in-

interviewing skills and selected topics related to the patients seen at the various sites. One course. *Kertesz and staff*

CFM 180. Final Preceptorship. This rotation is required of all students during the final six weeks of their training and provides a transition between the role of the student and graduate physician's associate. Students are encouraged to select a preceptor in the area of their anticipated employment and, during this period of time, to explore the tasks and team aspects of functioning as a midlevel practitioner. Students will provide health services consonant with their backgrounds, clinical experiences, and the needs of the particular practice setting. Required for certificate. Two and one-half courses. *Price, Hamilton, and staff*

CFM 191. Independent Study. This special four-week course enables students to select individually with program administrators a series of objectives and to develop a program that can reasonably be expected to achieve those objectives. One course. *Estes, Hamilton, and staff*

MEDICINE

MED 150. Inpatient Medicine. An eight-week full-time required clinical rotation in which the student learns to apply basic medical knowledge to the problems and situations encountered on an inpatient service. By collecting a data base, formulating a complete problem list, participating in daily rounds, and participation in the management of patient problems, the student develops an awareness and understanding of the multiple aspects of disease processes and becomes familiar with therapeutic regimen and dispositions relative to specific disease states. The student will present the data base of each new patient to the supervising physician or attending rounding physician in a coherent, concise fashion. Two courses. *Staff*

MED 151. Outpatient Medicine. During this rotation, the student learns to apply basic medical knowledge to the common problems and situations encountered on an outpatient/emergency service. Experience may include long-term follow-up of patients with chronic disease, emergency triage and management, and evaluation of acute self-limited problems. This rotation occurs in an institutional as opposed to a private setting. One or two courses. *Staff*

MED 152. Intensive Care. A four-week rotation that acquaints the student with the acute and intensive care required for patients who have undergone major and complex surgical procedures, suffered massive and severe trauma, cardio-respiratory collapse, or other life-threatening medical crises. Emphasis is placed on ventilatory assistance, cardiopulmonary resuscitation, fluid and electrolyte replacement, and acid-base balance under resident physician supervision. One course. *Staff*

MED 153. Cardiology. During the rotation students will become familiar with the presentation, evaluation, and management of cardiovascular disorders, including acute and chronic problems. Students will gain experience performing the medical history and physical examination and will learn appropriate diagnostic procedures and therapeutic regimens, including drug therapy, alterations in life patterns (smoking, diet, exercise, etc.), and surgical intervention. One or two courses. *Cardiology staff*

MED 155. Endocrinology. A four- or eight-week rotation designed to acquaint the student with endocrinological diseases. The emphasis is placed on obtaining the defined endocrine data base and appropriate treatment of the disease. Students attend all daily rounds and conferences while on the service. They are taught the indications, limitations, and methods of performing diagnostic procedures including: glucose, tolbutamide, and arginine tolerance tests; thyroid function tests; and urinary steroid determinations. Students help educate patients with endocrine diseases about their disease processes, diagnostic evaluations, and therapies. One or two courses. *Endocrinology staff*

MED 156. Gastroenterology. During this four- or eight-week rotation students study the diagnosis, pathophysiology, and essentials of therapy of various gastroenterologic problems. They learn to perform and interpret the following diagnostic procedures: nasogastric intubations and gastric analyses (both with and without fluoroscopy), secretin tests, rectal and small bowel biopsies, proctoscopies, sigmoidoscopies, and gastroscopies. They also learn to care for endoscopic and biopsy instruments and biopsy specimens. One or two courses. *Gastroenterology staff*

MED 157. Hematology-Oncology. During this four- or eight-week rotation the students become familiar with the presentation of hematologic and oncologic problems, including many which are serious and life-threatening. A major objective for the student will be learning to relate supportively to the feelings and needs of terminally ill patients. The student will also gain experience with various diagnostic procedures, including white cell differential, bone marrow aspiration, lumbar puncture, paracentesis and thoracentesis. Students will become familiar with the principles of blood transfusion. One or two courses. *Hematology staff*

MED 159. Pulmonary Medicine. A four- or eight-week rotation that provides an in-depth exposure to patients with respiratory conditions. The problems encountered by patients who have respiratory ailments are studied in detail as are the associated special history and physical examination techniques, diagnostic and therapeutic procedures. The student participates in daily rounds and teaching conferences on respiratory diseases and gains a knowledge of the therapeutic regimen, their indications, availability, reliability, and limitations in the treatment of respiratory and allergic diseases. One or two courses. *Pulmonary staff*

MED 160. Nephrology. During this four- or eight-week rotation, the student learns to gather and record information in a problem-oriented manner about patients with renal and hypertensive diseases. The student becomes able to recognize the effects of disease, therapy, and education on the patient's course and plays a major role in patient education. The fundamentals of renal function, urinalysis, radiography of the chest, urinary system and bones, and the principle of dialysis are covered. One or two courses. *Nephrology staff*

MED 161. Neurology. On this rotation, students learn about the presentation, evaluation, and management of patients with neurologic problems. The student develops an understanding of specialized history and physical techniques and diagnostic procedures, including electroencephalography, brain scan studies, pneumoencephalography, and central nervous system radiologic studies. Students also learn to relate supportively to patients whose symptoms may be frightening and/or have a serious prognosis. One or two courses. *Neurology staff*

MED 162. Rheumatology. This course provides the student with an indepth exposure to rheumatologic disease. Students gain insight into the psychosocial adjustments necessitated by chronic, potentially disabling disease. Students also gain familiarity with diagnostic procedures, therapeutic regimens, and learn how to do a meticulous and thorough joint examination. One or two courses. *Rheumatic and genetic diseases staff*

MED 163. Dermatology. During this rotation students gain familiarity with major classes of dermatologic diseases, ranging from acute self-limited problems to malignant conditions. Sensitivity to the negative effects of cosmetic disfigurement is stressed. Students gain experience with common diagnostic procedures and courses of treatment. One or two courses. *Tindall and dermatology staff*

MED 165. Clinical Infectious Disease. During this four-week rotation, the student learns to approach patients presenting with infectious diseases, to gather a data base from them, and to understand the manifestations of the illnesses and the rationale for therapy. One course. *Staff*

MED 191. Independent Study. This course is intended to allow students with particular interests in an area of internal medicine to structure a need-specific learning experience. Independent studies are arranged with the program staff and appropriate clinical faculty. One or two courses. *Staff*

MICROBIOLOGY

MIC 101. Introductory Microbiology. An introduction to diagnostic microbiology covering such topics as microbial morphology, staining characteristics, growth requirements, diagnostic tests, and antibiotic susceptibility testing. The clinical aspects of such subjects as pyogenic cocci, gram negative sepsis and nosocomial infection, meningitis, venereal disease, enteric infection, anaerobic pathogens, tuberculosis, mycotic diseases, viral infections, and the use of antibiotics are also included. One-half course. *Osterhout*

OBSTETRICS AND GYNECOLOGY

OBG 150. Obstetrics/Gynecology. During this rotation students learn about the health, needs, and concerns of women. Students learn about pregnancy, including prenatal care and management of labor and delivery. The student is expected to be fully familiar with the normal course of pregnancy and with common complications in order to provide educated and sympathetic support for the prospective mother. Students will also gain experience with common gynecologic concerns, including cancer detection, abnormal menstruation and bleeding, infections, and sexual dysfunction. Familiarity with the effectiveness, indications, and contraindications of various forms of contraception is a further objective. One or two courses. *Staff*

OPHTHALMOLOGY

OPH 150. Ophthalmology. This is a four- or eight-week rotation reviewing the major ophthalmologic disease. Through lectures, teaching rounds, and learning special history and physical examination techniques, the student develops an expertise in determining visual fields, visual acuity, and oculotonometry. The principles of refraction and the many medical and surgical therapeutic regimens available for treating ophthalmologic disorders are included. The student is also required to participate in the routine care of ophthalmologic inpatients and outpatients. One or two courses. *Staff*

PATHOLOGY

PTH 115. Clinical Diagnostic Procedures. Students develop skills for performing routine hematologic, urinary, and microbiological procedures suitable for emergency or office/clinic practice. Lectures and discussions are concerned with clinical interpretation and appropriate applications of laboratory data and physiologic derangements which frequently produce abnormal laboratory values. Basic principles of electrocardiography are presented also. A \$50 laboratory fee is required. One course. *Widmann, Schmidt, and Long*

PEDIATRICS

PED 150. Community Pediatrics. The major objective of this rotation is to provide students with an overview of community pediatric practice. Students will gain familiarity with normal growth and development and developmental evaluation, pediatric preventive medicine, and evaluation and management of common childhood illnesses. Special emphasis is placed on communication skills and relating sensitively to both children and parents. Each student will spend time in the newborn nursery and be involved with hospitalized patients. One or two courses. *Austin and staff*

PED 152. Intensive Care. A four-week rotation that acquaints the student with the acute and intensive care required for patients who have undergone major and complex



surgical procedures, suffered massive and severe trauma involving multiple organ systems, or experienced sudden cardiorespiratory collapse or other life-threatening medical crises. Emphasis is placed on ventilatory assistance, cardiopulmonary resuscitation, fluid and electrolyte replacement, and acid-base balance under resident physician supervision. Prerequisite: PED 150. One course. *Staff*

PED 153. Pediatric Chest and Allergy. During this four- or eight-week rotation the student is taught to obtain a complete history and physical examination with emphasis on the allergy data base and the structure of the family. Students gain understanding of the impact of chronic illness on children and their families. They gain an understanding of home care programs and are able to alter them to fit a family's ability and resources. The student carries out appropriate diagnostic procedures and assesses the results for children with pulmonary disease. One or two courses. *Staff*

PED 154. Full-Term Nursery. During this four- or eight-week rotation the student learns to collect the maternal history accurately and completely; to recognize those maternal conditions imposing risks on the full-term infant; to collect samples for newborn screening laboratory exams; to examine a full-term infant and distinguish those who are abnormal from those who are normal; and to give cogent instructions to mothers and fathers regarding home care of the infant. One or two courses. *Staff*

PED 191. Independent Study. This rotation allows students with a particular interest in an area of pediatrics to construct their own need-specific learning experience. PED 191 is arranged with the program staff and appropriate clinical faculty. One or two courses. *Staff*

SURGERY

SUR 101. Fundamentals of Surgery. This course has been recently redesigned to better focus on the needs of P.A.s in primary care settings. While including the basic concepts needed for P.A.s to function well in a major surgical setting, the course emphasis is on building expertise in the areas of minor surgical techniques, emergency procedures, and the surgically related skills needed in general medicine. Included in the lecture, laboratory, and skill sessions will be a wide variety of topics from anesthesia and asepsis to venipuncture. The students will learn first assisting, suturing, casting, various intubations, and will be certified in basic CPR. The final eight weeks of the course will emphasize work in the Animal Surgery Laboratory. One course. *Hendrix and staff*

SUR 150. General Surgery. A four or eight-week rotation that exposes the student to a great variety of clinical problems, crossing, at times, many so-called specialty lines. Basic surgical principles, as well as insights into many of the surgical specialties, can be learned on this service. Preoperative diagnostic principles and postoperative management are emphasized. The most attractive feature of the rotation is the great diversity of surgical problems encountered. One or two courses. *Staff*

SUR 151. Surgical Outpatient/ER. During this four-week rotation, students become familiar with the evaluation and management of surgical problems of the ambulatory patient. In the emergency room, students gain experience in the initial evaluation of potential surgical conditions, particularly abdominal pain. Students learn to perform problem specific examinations and have an opportunity to evaluate patients on return visits. One course. *Staff*

SUR 152. Intensive Care. During this experience the student learns to: recognize patients requiring intensive medical care; operate and maintain life-monitoring equipment; understand and evaluate fluid electrolyte replacement and acid-base balance; and administer cardiopulmonary resuscitation and ventilatory assistance. This experience may be gained on the respiratory care unit, medical care unit, intensive care nursery, surgical acute care unit, and in pulmonary function-inhalation therapy. One or two courses. *Staff*

SUR 153. Cardiothoracic Surgery. During this rotation, the student learns to perform a detailed history and physical examination with special emphasis on the cardiothoracic system. With special help from the resident and senior staff and through reading, the student should be able to appreciate special diagnostic procedures such as angiograms, pulmonary function studies, etc. In the operating room, the student will assist and follow the conduct of various open-heart and other major thoracic procedures. The resident, senior staff, and student will participate in the management of complex problems such as various arrhythmias, shock, fluid and electrolyte imbalance. One or two courses. *Cardiothoracic surgery staff*

SUR 155. Surgical Acute Care Unit. During this rotation the student is acquainted with the postoperative care of patients who have undergone surgical procedures or suffered massive and severe trauma involving multiple organ systems. Special emphasis is centered on ventilatory assistance problems, open-heart cases, neurosurgical problems, and massive trauma cases. The variety of the patients and the diversity of the problems that exist on the unit give the student a broad insight into surgical postoperative management. The student should strive for an understanding of the pathophysiology and physiology. One or two courses. *Cardiothoracic division staff*

SUR 156. Otolaryngology. During this rotation students will learn to evaluate problems related to the ear, nose, and throat. Experience will include both ambulatory and hospitalized patients. Students will gain familiarity with various diagnostic and therapeutic procedures and will have an opportunity to follow patients over a period of time. One or two courses. *Division of Otolaryngology and staff*

SUR 157. Plastic Surgery. During this course students gain familiarity with patients requiring plastic repair including burn patients, and patients with facial anomalies and maxillofacial neoplasms. The course objectives include an understanding of preoperative and postoperative care, recording the initial history and physical examination, and ordering indicated laboratory tests and studies. It is hoped that the student will learn to respond sensitively to the emotional needs of this group of patients. One or two courses. *Division of Plastic Surgery and staff*

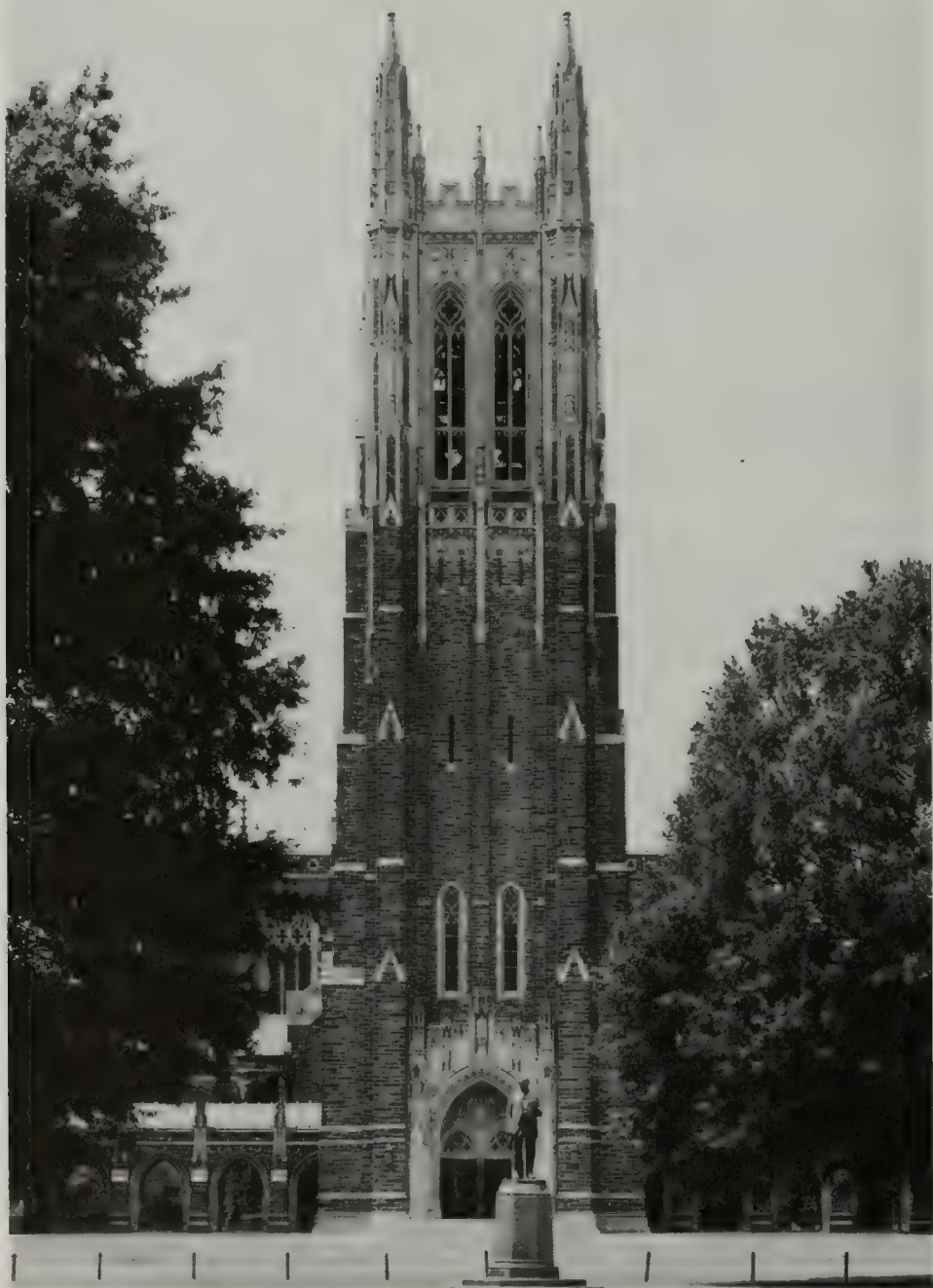
SUR 160. Urology. During this rotation, students learn about urologic disease. Students participate in the care of clinic and hospitalized patients with common urologic problems and take part in initial evaluations, diagnostic procedures, surgery, and acute and long-term follow-up care. One or two courses. *Division of Urology*

SUR 161. Neurosurgery. During this eight-week rotation the student is provided with a working understanding of the problems unique in the diagnosis, treatment, and management of the neurosurgical patient. The student may gain experience in the operating room by assisting with the patient, with instrumentation, and with the operative procedures. A working knowledge is gained of diagnostic techniques such as carotid arteriograms, electroencephalograms, ventriculograms, spinal taps, etc. Experience and knowledge in emergency room techniques and management of acute neurosurgical injuries (GSW, blunt head trauma, acute quadriplegia, hemiplegia, etc.) is included. One or two courses. *Division of Neurosurgery*

SUR 162. Orthopaedic Surgery. Students gain familiarity with the evaluation and management of common orthopaedic problems at the primary care level, including soft tissue injuries, fractures, arthritis, and low back pain. Students will learn the mechanism for applying different types of traction, how to apply splints and casts, and how to provide emergency care for acute trauma. One or two courses. *Orthopaedic Division*

SUR 191. Independent Study. This rotation allows students with a particular interest in an area of surgery to construct their own need-specific learning experience. SUR 191 is arranged with the program staff and appropriate clinical faculty. One or two courses. *Surgical staff*

Graduate Degree Programs



The Master of Health Sciences in Biometry Program

Duke University School of Medicine awards a Master of Health Sciences in Biometry degree to students who complete the Biometry Training Program. This new training program meets an existing need at Duke University Medical Center for formalized academic training in the quantitative and methodological principles of clinical investigation. Designed primarily for Duke clinical fellows who are training for academic careers, the program offers formal courses in biostatistics, epidemiology and the use of computers for processing and analyzing medical data. The program is designed to provide maximum flexibility for part-time study, thereby allowing the fellow-student to integrate the program's academic training with his or her clinical training.

The degree requires 24 units of graded course work and a research and thesis project for which six units of credit is given. The formal course work consists of a core curriculum of five courses (15 units) required of all degree candidates and three elective courses (9 units). The student's clinical research activities provide the setting and the data for the project; the thesis serves to demonstrate the student's competence in the use of quantitative methods in medical research.

The Biometry Training Program is offered by the faculty of the Division of Biometry and Medical Informatics in the Department of Community and Family Medicine with the participation of other members of the Medical Center faculty having expertise in relevant areas.

The core curriculum consists of the following courses:

BMI 211. Probability and Statistical Inference. Laws of probability, probability distributions, descriptive statistics, graphical displays of relationships, philosophy of statistical tests, tests for differences in central tendency, paired comparisons and correlation. Type I and Type II errors and problems of multiple comparisons. 3 units.

BMI 212. Design of Etiological, Clinical and Experimental Studies. General principles of study design. Observational studies, including case-control and cohort designs, their relative advantages and statistical methods used in their analysis. Experimental studies, including randomized controlled clinical trials, their principal features, ethics and alternative sequential design strategies. Design of data collection instruments and studies to assess observer variability and to evaluate diagnostic tests. Prerequisite: BMI 211 (may be taken concurrently). 3 units.

BMI 213. Medical Data Management and Statistical Computing. Basic computer organization and operation, data entry, quality control, data management considerations and file structures. Using SAS for storing, manipulating and analyzing data. 3 units.

BMI 214. Statistical Issues in Study Design and Critique of Medical Literature. Formulation and refinement of hypotheses, estimation of adequate sample sizes, methods of quantifying variables and techniques for increasing statistical power. Critique of journal articles from basic and clinical research. Prerequisites: BMI 201, BMI 212. 3 units.

BMI 215. Regression Models. Formulation of linear regression models and definition of model parameters in the context of analysis of variance, analysis of covariance and multivariable regression. Techniques for graphically checking model assumptions and testing lack of fit. Model validation, the effect of modeling too many variables and methods for reducing the number of variables to model. Introduction to the logistic and Cox proportion hazards regression models. Prerequisites: BMI 211, BMI 213.

Courses to be offered as electives will be developed by the program faculty and will include such topics as: methods of analysis of survival data; clinical decision analysis; clinical trials; advanced data management in clinical research; and statistical methods in human genetics. Other electives may include courses already available in other University programs, such as the Departments of Computer Science and Biomedical Engineering, the Institute of Statistics and Decision Sciences and the Center for Health Policy Research and Education.

Clinical fellows entering training programs in July may apply for fall admission to the Biometry Training Program after arriving at Duke.

For additional information contact William E. Wilkinson, Ph.D., Chief, Division of Biometry and Medical Informatics, Box 2914, Duke University Medical Center, Durham, North Carolina 27710, (919) 286-9243.

The Graduate School of Duke University awards a Master of Health Administration degree to students who complete the program in health administration and a Master of Science degree to students who complete the program in physical therapy. Both health administration and physical therapy are departments in the Graduate School and additional information, including courses of instruction, may be found in the Graduate School bulletin which is available through the Office of Admissions, Graduate School, Duke University, Durham, North Carolina 27706. Graduate programs are also integral parts of Duke University Medical Center.

Health Administration

Professors: J. Alexander McMahon, *Chairman*; B. Jon Jaeger, Ph.D.; David G. Warren, J.D.

Associate Professors: David J. Falcone, Ph.D.; Robert E. Taylor, Ph.D.

Assistant Professor: Donald S. Smith, M.H.A.

Adjunct Associate Professors: William J. Donelan, M.B.A.; Robert G. Winfree, M.A.; Duncan Yaggy, Ph.D.

Adjunct Assistant Professors: Nancy E. Cahill, J.D.; Anne L. Martin, Ph.D.; J. Kevin Moore, J.D.

Consultants: David M. Kinzer, A.B.; Robert E. Toomey, LL.D.

The Graduate School of Duke University awards a Master of Health Administration degree to students who complete a four-semester, two-year graduate program in the Department of Health Administration.

The M.H.A. program prepares carefully selected students for careers in hospitals and other health care organizations. Educational emphasis is placed on business and management theory and skills, practical exposure to the health services environment, and an appreciation of the health care ethic. Students graduating from the program will have a strong quantitative and qualitative foundation for analysis and decision making.

Program of Study. To provide a broad management base, a cooperative curriculum has been established between the Department of Health Administration and the Fuqua School of Business. Students spend the majority of their first year in core management courses at Fuqua. In addition, students take one course each semester in the Depart-

ment of Health Administration, plus a laboratory course in which they are introduced to the Duke University Medical Center and other parts of the health system.

During the summer following the first year, students are required to participate in a practicum of at least ten weeks duration. Under a preceptor's guidance in a hospital or other health system organization, each student observes health organization management and develops a project for the organization. The department assists with placement, balancing students' wishes with preceptors' needs. In the second year of the program, students concentrate on specialized courses in health administration. There are a number of required courses that enhance the students' perception of management and finance in the health system. Elective courses are offered to enable students to obtain more specialized knowledge in such areas as marketing and cost-benefit analysis. Electives are available within the department, at Fuqua, and in other graduate programs at Duke University.

Admission. Admission is highly competitive; one class of approximately thirty students is admitted each year, to start in late August. Selection is based on previous academic and professional work, Graduate Management Admission Test scores, letters of recommendation, and personal interviews conducted on campus. Competency in calculus is a prerequisite for admission. For further information write to the Admissions Coordinator, Department of Health Administration, Box 3018, Duke University Medical Center, Durham, North Carolina 27710.

Tuition and Expenses. Tuition for the 1988-89 academic year is \$13,500. Estimated costs for the first year are approximately \$20,000, including tuition and living expenses.

Financial Aid. A limited amount of scholarship aid is available based on need, as well as a limited amount of aid based on merit. The Medical Center Office of Financial Aid also offers financial assistance in the form of loans which are awarded based on need. Financial aid based on need will be determined by using the criteria as stated in the section on student aid in the chapter "The Allied Health Programs". Health administration students are not eligible for fellowships, assistantships and traineeships offered by the Graduate School.

Physical Therapy

Professor: Robert C. Bartlett, M.A., *Chairman*

Associate Professors: Eleanor F. Branch, Ph.D., *Director of Graduate Studies*; Elia E. Villanueva, M.A.; Terry Malone, Ed.D.

Assistant Professors: Grace C. Horton, B.S.; Pamela W. Duncan, M.A.C.T.; Jan Gwyer, Ph.D.

Assistant Clinical Professor: Mary Ellen Riordan, M.S.

Clinical Associates: Linda M. Lawrence, B.S.; Daniel Dore, M.P.A.; Julie M. Chandler, M.S.

Adjunct Assistant Professor: Marcia Roses, M.A.

Adjunct Associates: Hazel Adkins, M.A.; Nicholas Caras, Ed.D.; Susan E. Harryman, M.S.; Charlene Nelson, M.A.; Martha Propst, M.A.; Wadsworth D. Roy III, B.S.; Gail W. Vanderlaan, B.S.; Elizabeth T. Warren, B.S.

The Duke University Graduate Program in Physical Therapy, leading to the Master of Science degree, is a program for entry into the profession of physical therapy. The program is designed to provide a comprehensive foundation in the art and science of physical therapy, preparing individuals for clinical practice. Experiences in the areas of administration and research are also provided. Students may arrange their curricula to allow for the development of teaching skills.

Program of Study. The fully accredited program of study requires fifty-two credit units of graduate course work, research, clinical affiliation, or other equivalent academic experience, and is twenty-two consecutive months in length. Forty to forty-two units of work must be in physical therapy, seven units in designated courses in anatomy, and the remaining three to five units in electives in related fields. A research project is required which provides the opportunity to pursue a particular aspect of physical therapy in depth.

Prerequisites for Admission. Requirements for admission to the physical therapy program include a baccalaureate degree, completion of prerequisite courses, Graduate Record Examination (GRE) Aptitude Test scores, the filing of an application, and, upon invitation, a personal interview. In order to meet the closing date of 15 January, it is strongly recommended that the GRE be taken no later than the October test date. The application and all supportive documents must be received by the Graduate School Office of Admissions by 15 January and only completed applications are forwarded to the Graduate Program in Physical Therapy. No application forms are mailed after 1 January. Only students for full-time study are accepted. State of residency does not influence admission policies or tuition costs. Requests for applications and further information should be directed to the Director of Graduate Studies, Department of Physical Therapy, Box 3965, Duke University Medical Center, Durham, North Carolina 27710.

Tuition and Expenses. The 1988-89 academic year tuition for students enrolled in the Graduate Program in Physical Therapy is \$295 per credit unit. Estimated cost for the two-year program is approximately \$33,000, including tuition and living expenses.

Financial Aid. All students are encouraged individually to seek sources of financial assistance. Loan money may be available through the Duke University Medical Center. Financial aid applications are mailed to students after acceptance into the program. Please refer to the section on student aid in the chapter, "The Allied Health Programs." Physical therapy students are not eligible for fellowships, assistantships and traineeships offered by the Graduate School.



Certificate Programs



Duke University Medical Center has responded to the increased need for qualified individuals at all levels in the health care system by developing educational programs designed to equip people for a variety of positions. These programs, which vary in admission requirements and length of training, offer students both clinical and didactic experience. Graduates of these programs are awarded certificates.

Clinical Psychology Internship

The Division of Medical Psychology, Department of Psychiatry, Duke University Medical Center, offers internship training in clinical psychology to students who are currently enrolled in APA-approved Ph.D. programs in clinical psychology and who have already completed three years of graduate study. The program, approved by the American Psychological Association, provides experience in many contexts with a wide diversity of patients. Internship training provides experience in the traditional activities of clinical psychologists: assessment, consultation, psychotherapy, and research. Those successfully completing the requirements for internship will be awarded a Duke University Medical Center certificate. Requests for additional information and correspondence concerning admission to the program should be directed to the Director, Clinical Psychology Internship Program, Box 3362, Duke University Medical Center, Durham, North Carolina 27710.

Electrophysiology Technology

Medical Director: Darrell V. Lewis, M.D.

Program Director: Linda Ollis, B.S., R.EEG T.

Clinical Coordinator: Linda Quinlivan, R.EEG T.

Professor: C. W. Erwin, M.D.

Associate Professor: Michael R. Volow, M.D.

Assistant Professors: Rodney A. Radtke, M.D.; Richard Weiner, M.D.

Evoked Potential Instructor: Andrea Erwin, B.A.

Instructional Staff: Neurology residents and laboratory staffs at Duke and the Durham VA Medical Centers and Epilepsy Centers

The Electrophysiology Technology Program is sponsored by the Division of Neurology, Department of Medicine, Duke University Medical Center. A major part of the course involves training in EEG (electroencephalography) and EP (evoked potential) technology. Other areas to which the student is exposed include electrocardiography, electromyography, and EEG research. Five to eight students are accepted into the program each session. A class will begin in September 1986 and finish in late November 1987. The next class will begin in March 1988 and finish in late May 1989. Upon successful completion of the fifteen-month program, graduates are awarded a certificate and are eligible to take the certifying examination given by the American Board of Registration of Electroencephalographic Technologists.

Program of Study. The program consists of fifteen months of classroom instruction and clinical training. Approximately two hours per day are spent in the classroom. The remainder of each day is spent in clinical sites at Duke University, Durham VA Medical Center, or Durham County General Hospital.

Prerequisites for Admission. Applicants must have a high school diploma. Applicants who had a science-oriented high school curriculum and/or some college experience will receive priority.

Application Procedures. Applications must be received by 1 June of the years for which classes begin in September and by 1 December of the years in which classes begin in March. Applications must contain the following:

1. a completed application form;
2. results of the Scholastic Aptitude Test from the College Entrance Examination Board (CEEB);
3. official high school and/or college transcripts;
4. at least three letters of recommendation from individuals not related to the applicant—one from an individual acquainted with the applicant's character and the others from those acquainted with the applicant's educational or professional experience.

All applicants are notified by 15 July (or 15 January of alternate years) regarding admission to the program. Requests for further information and application forms should be directed to the Program Director, EEG Laboratory, P.O. Box 3948, Duke University Medical Center, Durham, NC 27710.

Fees and Expenses. A fee of \$1,525 is required of all students enrolled in the program. An additional nonrefundable fee of \$30 for processing the application, payable to Duke University Medical Center, must accompany the application. Students do not pay full Duke tuition. Students must furnish their own uniforms. In addition, books cost approximately \$275. The Student Health fee is \$476 per year.

Financial Aid. Please refer to the section on student aid in the chapter, "The Allied Health Programs."

Hospital and Clinical Pharmacy Residency

Director of Pharmacy Services: James C. McAllister, M.S.

Associate Director of Pharmacy Services: Stephen C. Dedrick, B.S.

Assistant Director for Clinical Services: Christine Rudd, Pharm.D.

Coordinator for Residency Training: Austin Lee, Pharm.D. Residency Program.

The Hospital and Clinical Pharmacy Residency is a twelve-month postbaccalaureate program conducted by the Department of Pharmacy at the Duke University Medical Center. The residency is designed to give the graduate pharmacist extensive training in clinical pharmacy practice and basic hospital pharmacy services including unit-dose

drug distribution, large and small parenteral admixture service, total parenteral nutrition program, controlled drug systems, and hospital pharmacy administration.

Admission Standards. Applicants must be graduates of accredited schools of pharmacy and must have a B.S., M.S., or Pharm.D. degree. Resident candidates must have demonstrated good academic and leadership capabilities and be eligible for licensure in North Carolina. It is preferable that the applicant have previous hospital pharmacy experience.

Application Procedures. Applications must be submitted by 30 January of the year for which admission is requested and include the following:

1. ASHP resident matching program registration by the preceding 15 December;
2. personal interview, to be arranged by appointment;
3. official transcript from pharmacy school and other professional programs attended;
4. completed Allied Health Division application forms; and
5. letters of recommendation from at least three persons who have known the applicant professionally (i.e., pharmacy school professor, hospital pharmacist, clinical pharmacist).

Applicants will be notified by 30 March regarding admission to the program. Requests for further information and application forms should be directed to the Coordinator for Residency Training, Box 3089, Duke University Medical Center, Durham, North Carolina 27710.

Stipend. A stipend of \$20,000 is granted for the twelve-month residency.

Travel Allowance. A travel allowance of \$350 is granted for the twelve-month residency.

Medical Technology

Chairman, Department of Pathology: Robert B. Jennings, M.D., *James B. Duke Professor of Pathology*

Director of Hospital Laboratories: Kenneth A. Schneider, M.D., *Professor of Pathology*

Medical Director, Medical Technology Program: Frances K. Widmann, M.D., *Associate Professor of Pathology*

Program Director, Medical Technology Program: Margaret C. Schmidt, M.A., MT(ASCP)SH, CLS(NCA), CLSpH(NCA), *Associate in Pathology*

Assistant Program Director, Medical Technology Program: Cynthia L. Wells, Ed.D., MT(ASCP), CLS(NCA)

Education Coordinators, Medical Technology Program: Kenni B. Beam, M.S., MT(ASCP)SM, CLSpM(NCA); Iris W. Long, M.B.A., MT(ASCP)SH, CLSpH(NCA); Denise Y. Rodio, B.S., MT(ASCP)SBB

Professor: John A. Koepke, M.D.

Associate Professors: Dolph Klein, Ph.D.; Thomas G. Mitchell, Ph.D.; Emily Reisner, Ph.D.; Peter Zwydyk, Ph.D.

Assistant Professors: William H. Briner, B.S.; Robert H. Christenson, Ph.D.; Jane T. Gaede, M.D.; Frank Sedor, Ph.D.; John Toffaletti, Ph.D.

Associate: John A. Bittikofer, Ph.D.

Medical Research Associates: Enrique Estevez, Ph.D.; Lizzie Harrell, Ph.D.

Instructors: Lee A. Barbieri, B.S., MT(ASCP); Robert F. Wildermann, M.S., C(ASCP).

Clinical Teaching Staff: Billy H. Abrams, B.A., MT(ASCP); Judith P. Adams, B.S.; Marilyn Alexieff, B.A., MT(ASCP); Donald Bennett, B.S., MT(ASCP); Barbara Benton, B.S.; Theresa Bolk, M.B.A., MT(ASCP)SBB; Ann Califf, B.S., MT(ASCP)SBB; Mary Lee Campbell, B.S., MT(ASCP)SBB; Janet Celko, B.S., MT(ASCP); Angela Christmas, B.S.; Adella Clark, B.S., MT(ASCP); Martha Rae Combs, B.S., MT(ASCP)SBB; Debbie Combs-Jones, B.S., MT(ASCP); Betty R. Crews, B.S., MT(ASCP); Jean T. Crute, B.S., MT(ASCP); Mary Ann Dotson, B.S., MT(ASCP); Debbie Eveland, B.S., SBB(ASCP); Priscilla L. Farmer, B.S., MT(ASCP); Lisa A. Fracica, M.M.Sc., RM(AAM); June Gregonis, B.S., MT(ASCP); Samuel E. Hargraves, B.S., NRCC; Kay Harris, Cathy Holleman, M.S., MT(ASCP)SC; Kathryn Kirvan, B.S., MT(ASCP)SC; Freda Kohan, B.S., MT(ASCP)SM; Ellen Lundberg, B.S., MT(ASCP); Janet Mueller, B.S., MT(ASCP); Beverly S. Oxford, B.S., MT(ASCP)SC; Ann Padgett, B.H.S., MT(ASCP)SM; Ruth Parrish; Rebecca Peterson, B.S., MT(ASCP); Don Royster, CLPIb(NCA); Linda Ryan, B.S., MT(ASCP); Norma Sabiston, B.S., MT(ASCP); Wiley Schell, M.S.; Mary S. Smith, MT(HEW); Charles E. Stewart, B.H.S., MT(ASCP); Bill Thorpe; Irene A. Wyatt, B.S., MT(ASCP)

Affiliate Institution Advisers: Robert K. Reid, Ph.D., *Meredith College*; Marsha E. Fanning, Ph.D., *Lenoir-Rhyne College*; Stephen R. Nohlgren, Ph.D., *Salem College*; Francis M. Knapp, Ph.D., *Stetson University*; Grover C. Miller, Ph.D., *North Carolina State University*; Steven Chalgren, Ph.D., *Radford University*; Larry Martin, Ph.D., *University of Tampa*; Eileen Gregory, Ph.D., *Rollins College*; Edwin L. Bell, Ph.D., *Albright College*.

Program of Study. The educational program begins 1 June and consists of fifty-six instructional weeks plus three weeks of vacation. The first twelve weeks consist of a core curriculum of clinical pathology courses offered to all students at the same time. After successful completion of the core curriculum, the student is eligible to begin forty weeks of clinical rotations in the Medical Center laboratories. In the spring, a four-week term is devoted to a course of study in educational techniques, management and supervision, computers in laboratory medicine, and other clinical laboratory sciences. Lectures, student laboratory experience, and clinical laboratory instruction are presented by a faculty and staff of medical technologists, physicians, chemists, and microbiologists.

Graduates of this CAHEA-accredited program are eligible for national certification as a medical technologist. Career opportunities in hospital laboratories, research, public health facilities, and educational institutions are available. This program is formally affiliated with Meredith College, Raleigh, North Carolina; Lenoir-Rhyne College, Hickory, North Carolina; the University of Tampa, Tampa, Florida; Salem College, Winston-Salem, North Carolina; Stetson University, Deland, Florida; North Carolina State University, Raleigh, North Carolina; and Radford University, Radford, Virginia to provide the 3+1 study format toward a degree from these institutions. A cooperative agreement exists with Rollins College, Winter Park, Florida, and Albright College, Reading, Pennsylvania to channel 4+1 students to this program.

Prerequisites for Admission. Applicants to the program must possess the following academic prerequisites:

1. Possession of a baccalaureate degree, OR the completion of at least three years of study in an accredited college or university which totals ninety semester hours (120 quarter hours) with grades of C or better, and the written guarantee that a baccalaureate degree will be conferred by a university after successful completion of this program.
2. Four courses in major-track chemistry (including at least one course in organic chemistry).
3. Four courses in major-track biology (including one course in microbiology).
4. One course of college level mathematics.

Application Procedures. A completed application file contains the following:

1. The completed Duke University Medical Center Allied Health application form, including a nonrefundable processing fee;
2. Official transcript(s) from all colleges and universities attended;
3. Three letters of recommendation, one from a professor of biological sciences, one from a professor of chemistry, and one from a college advisor;
4. A personal interview with members of the Admissions Committee, if requested, following the receipt of the application and other information;
5. A written statement of interest in medical technology;
6. A NAACLS transcript evaluation, if requested.

The deadline for applications is 1 April of the year for which admission is requested. It is strongly recommended that applications be submitted by 15 February to receive timely consideration. Applications received after 15 February will be considered on a space-available basis. Applicants will be notified no later than 1 May regarding admission to the program. Requests for further information and application forms should be directed to the Medical Technology Program Admissions, Box 2929, Department of Hospital Laboratories, Duke University Medical Center, Durham, North Carolina 27710.

Fees and Expenses. Tuition for the program is \$2,325.* A minimal lab fee is charged for the core curriculum. The student is responsible for housing, board, uniforms, books, and student health fee and medical insurance.

A nonrefundable deposit of \$175 is required of all accepted candidates to hold their place in the class. This deposit applies toward the tuition fee. The remaining tuition and fee balance is billed in two increments; at matriculation and in January (mid-year).

Transportation Required. The use of facilities other than Duke and Durham Veterans Administration Medical Centers requires transportation. It is the responsibility of each medical technology student to provide a means of transportation to and from the facilities selected for learning experiences. Although a few sites may be within bicycling distance, most are not.

Financial Aid. Please refer to the section on student aid in the chapter, "The Allied Health Programs." All candidates are urged to seek independent sources of financial assistance.

Part-time Employment. Students who wish to work are eligible to compete for available part-time paid positions within Hospital Laboratories *after* successful completion of the core curriculum. Such positions are not to exceed 19.9 hours per week.

Courses of Instruction. Students must complete the following courses:

Core Curriculum		
Course Title	Lect/Lab	Clock Hours
MT 103	Introduction to Clinical Laboratory Sciences	25/8
MT 107A	Immunology/Human Pathology	50/00
MT 112A	Fundamental Principles of Instrumentation	44/32
MT 120	Immunohematology	42/24
MT 121A	Fundamental Principles of Blood and Body Fluids	36/48
MT 132	Medical Microbiology/Serology	44/25

Course work in the core curriculum must be successfully completed to gain access to clinical rotation courses which follow.

Clinical Rotations and Courses			
Course Title	Lecture	Clock Hours	Total Rot. Weeks
MT 151	Clinical Microbiology/Serology	—	11
MT 153	Clinical Immunology-Immunohematology	—	9
MT 155	Clinical Blood and Body Fluids	—	9
MT 157	Clinical Chemistry	—	11
MT 107B	Immunology/Human Pathology (continued)	—	—
MT 112B	Biochemistry of Disease	45	—
MT 113	Quality Assurance in Health Care	20	—
MT 114	Clinical Laboratory Futures	36	—
MT 121B	Pathology of Blood and Body Fluids	40	—
Spring Term	Lect/Lab		Clock Hours
MT 110	Medical Applications of Computers		12/03
MT 122	Parasitology		8/16
MT 124	Educational Techniques for the Health Professional		20/00
MT 126	Laboratory Supervision and Management		24/00

Ophthalmic Medical Technician

Professor: W. Banks Anderson, M.D., Medical Director

*Subject to change without prior notice.

Associate Professor: Judy H. Seaber, Ph.D., *Program Director*
Teaching Staff: Linda Griffin, CO; Barbara Suitt, R.N., COT, *Clinical Coordinator*

The ophthalmic medical technician program is sponsored by the Department of Ophthalmology, Duke University Medical Center. This is a one-year certificate course designed to prepare the student to perform adequately as an ophthalmic medical technician. The program consists of didactic lectures designed to provide the basic clinical background necessary for the student to understand and perform the technical tasks designated to them by an ophthalmologist. The educational program begins 1 July, and consists of forty-nine weeks of instruction with three weeks of vacation. The core curriculum will be covered within the first six months supplemented by clinical experience under close supervision of clinical support staff and faculty. The second half of the program will consist of clinical rotations with the student working under the close supervision of qualified clinical support staff and faculty and evaluated on a routine basis as their skills develop.

Upon satisfactory completion of the course, students will receive certification from Duke University Medical Center. Following one year of work experience graduates are eligible to sit for national certification examination by the Joint Commission of Allied Health Personnel in Ophthalmology at the level of an ophthalmic medical technician.

Prerequisites for Admission. Applicants to the program must have two years of college or the equivalent.* Priority will be given to students with a college degree or extensive work experience in some field of ophthalmology.

Application Procedures. Applications must be received by 1 May of the year for which admission is requested and must contain the following:

1. the completed Duke University Medical Center Allied Health application form, including a nonrefundable processing fee;
2. official transcript(s) from all colleges and universities attended;
3. three letters of recommendation;
4. a personal interview with members of the admissions committee may be requested following receipt of the application and other information.

The deadline for applications is 1 May of the year for which admission is requested. It is strongly recommended that application be submitted as early as possible. Applicants will be notified no later than 1 June regarding admission to the program. Requests for further information and application forms should be directed to the Program Director, Judy H. Seaber, Ph.D., Box 3802, Duke University Eye Center, Durham, North Carolina 27710.

Fees and Expenses. Tuition for the program is \$2,400. The student is responsible for housing, board, books and student health fee and medical insurance. Fifty percent of the tuition is due at matriculation with the balance being due in January.

Transportation Required. It may be necessary for students to rotate at clinical sites other than at Duke University Medical Center and transportation may be necessary. It is the responsibility of the student to provide a means of transportation to and from the facility, selected for learning experiences.

Financial Aid. Financial aid through state and federal programs is not available through 1989. All candidates are urged to seek independent sources of financial assistance.

Courses of Instruction. Students must satisfactorily complete the following courses. The curriculum will include but will not be limited to the following:

*Decided by the admissions committee on an individual basis.

<i>Course Title</i>	<i>Clock Hours</i>
Basic Science Lecture	200
Visual Acuity Assessment	10
Physiology and Anatomy of the Eye	20
Physical History	9
Cardiopulmonary Resuscitation	16
Instrument Maintenance	5
Visual Fields	40
Optics	40
Spectacles	10
Anatomy	10
Glaucoma	16
External Diseases	8
Physiology	12
Contact Lens	14
Ocular Motility	15
Neurology	5
Practicums, Clinical I, II, III, IV, V	<u>TBA</u>
TOTALS	430

Pastoral Care and Counseling

Associates in Instruction: James L. Travis, B.D., Th.M., Ph.D.; Dorothy Dale Owen, M.Div.; David M. Franzen, B.D., Th.M.; Patrick Persaud, B.D., S.T.M.

A graduate program in pastoral care and counseling is available to clergy and sympathetic laity of all religious groups. There are four program options: a single unit of clinical pastoral education, an internship, a residency, and a fellowship. All are designed to train ordained individuals who desire to specialize in pastoral care and counseling, enhance their skills as parish clergy, or to broaden their understanding. Those who enroll in the program will be required to serve as chaplains in the Medical Center. All program options are approved by the Association for Clinical Pastoral Education, Inc.

Programs of Study. The following programs in basic, advanced, and supervisory clinical pastoral education are offered at the Duke University Medical Center:

Single Unit of Basic CPE. The single unit is offered during the summer months, beginning in June and lasting ten to twelve weeks (dates to be specified). It is also offered on a part-time basis concurrently with the fall and spring semesters of Duke Divinity School (the extended unit). Admission to the single unit of basic CPE is based on the following:

1. submission of written application materials;
2. admission interview by a qualified examiner;
3. acceptance by the center.

*Clinical Internship (Basic CPE).** The internship begins in June and lasts for twelve months (dates to be specified). This program grants four units of CPE credit with the ACPE. Admission is based on the following:

1. graduation from college—equivalence may be considered;
2. evidence of serious religious and theological interest;
3. completion and supervisor's evaluation of one certified unit of CPE (basic unit) in an accredited center usually strengthens the application;
4. submission of written application materials;
5. a personal interview with the supervisory and teaching staff;
6. acceptance by the center.

*Students who are taking more than two courses (not including CPE) in the Divinity School for academic credit will receive only three certified units of CPE— one in the summer, one in the fall, and one in the spring. All others receive four units of certified CPE. Beginning and ending dates vary according to the needs of the trainee and the program.

*Clinical Residency (Advanced CPE).** The residency is only occasionally offered; it usually lasts twelve months. The specialization of the advanced year may be in a number of clinical settings. Four units of CPE credit are granted with the ACPE. Admission is based on the following:

1. adequate ministry formation/development and experience in ministry which indicates readiness for this program;
2. submission of written application materials;
3. a personal interview with the supervisory and teaching staff;
4. acceptance by the center.

*A Fellowship in Supervisory CPE.** Supervisory CPE provides a learning opportunity for the qualified person, with demonstrated personal, professional, and clinical competence who desires to become a certified supervisor of CPE. Admission to this program is based on his/her potential to assist others in the clinical methods of learning, together with a capacity to acquire techniques and theories of supervision. Admission to supervisory CPE is based on:

1. ecclesiastical endorsement;
2. a period of time which allows the candidate to demonstrate his/her ability to function pastorally, usually not less than three years;
3. completion of program objectives of basic and advanced CPE, usually at least four units of CPE;
4. consultation by the appropriate committee in the region with respect to his/her readiness to pursue supervisory training;
5. submission of written application materials;
6. a personal interview with the supervisory and teaching staff;
7. acceptance by the center.

Beginning and ending dates vary according to the needs of the trainee and the program.

Requests for application and further information about any of the programs should be directed to the Director, Clinical Pastoral Education Programs, Box 3112, Duke University Medical Center, Durham, North Carolina 27710.

Fees and Expenses. A fee is usually charged for the screening (admission) interview. In our region of the ACPE, Mid-Atlantic, the fee is \$35. The fee varies from place to place throughout the nation. All students who take clinical pastoral education at Duke Medical Center must be accepted and enrolled through either the Duke University School of Medicine or Duke Divinity School.

Students who wish to receive academic credit shown on a transcript should apply for admission to Duke Divinity School as a degree candidate (M. Div. or Th.M.) or as a special student. They will then enroll for CPE through Duke Divinity School and will pay fees to the Divinity School according to Divinity School charges.

All other students must be enrolled through the Duke University School of Medicine, whether for single units or year-long programs. For 1988-89 fees are \$300 per unit. The Student Health fee is \$357 per year.

Financial Aid. A limited number of training stipends is available for the internship, residency, and fellowship. No stipends are available for the single unit of training.

*Students who are taking more than two courses (not including CPE) in the Divinity School for academic credit will receive only three certified units of CPE—one in the summer, one in the fall, and one in the spring. All others receive four units of certified CPE. Beginning and ending dates vary according to the needs of the trainee and the program.

Physician Assistant

A limited number of students who are not eligible for admission to the Bachelor of Health Science degree program, but who possess outstanding credentials in a health care field, are accepted into the certificate program. The two-year program, including tuition, is the same as that described previously. Students are issued a Duke University undergraduate identification card and are granted the same privileges as the physician assistant students in the Bachelor of Health Science degree program. Prerequisites for admission differ in that applicants not planning to receive the degree need not complete sixty semester hours of college level courses. Also, these applicants must submit their high school transcript(s); transcripts from diploma nursing or other health professional schools and military training programs; must complete by 15 January a college level course in both general chemistry and general biology; and must complete, also by 15 January, two years of health care experience.

Specialist in Blood Bank Technology

Chairman, Department of Pathology: Robert B. Jennings, M.D., *James B. Duke Professor of Pathology*

Director of Hospital Laboratories: Kenneth A. Schneider, M.D., *Professor of Pathology*

Medical Director, Specialist in Blood Bank Technology Program: John A. Koepke, M.D., *Professor of Pathology*

Program Director, Education Coordinator, Specialist in Blood Bank Technology Program: Denise Y. Rodio, MT(ASCP) SBB

Program Instructors: Tabbie Bolk, MT(ASCP) SBB; Gail Vesilind, MT(ASCP) SBB; Mary Lee Campbell, MT(ASCP) SBB; Martha Rae Combs, MT(ASCP) SBB

Professors: Wendell K. Rosse, M.D.

Associate Professors: Frances K. Widmann, M.D.; Emily G. Reisner, Ph.D.

Associate: Margaret C. Schmidt, M.A., MT(ASCP) SH, CLS(NCA)

Instructors: Cynthia L. Wells, Ed.D., MT(ASCP), CLS(NCA); Robert F. Wildermann, M.S. C(ASCP)

Triangle Center Red Cross Instructors: Ann Califf, MT(ASCP) SBB; Janet Celko, MT(ASCP).

The Transfusion Service in the Department of Hospital Laboratories of the Duke University Medical Center offers a twelve-month program in advanced blood bank technology. This program is accredited by the American Association for Blood Banks and the American Medical Association's Committee on Allied Health Education and Accreditation (CAHEA). It is designed to give experience in administration, supervision, teaching, technical consultation, and research. Upon satisfactory completion of the course work, the student is awarded a certificate and is eligible for national certification as a Specialist in Blood Bank Technology. Career opportunities in hospital blood banks and transfusion services, independent blood centers, research and development laboratories, sales and marketing positions, and educational institutions are widely available.

Program of Study. This educational program begins the first Monday of January and consists of fifty-two educational weeks. The months of January, February, and June are devoted solely to didactic work with instruction being provided by the faculty and staff of the Medical Center and Triangle Center of the American Red Cross. Rotations will begin in March and continue through December.

Prerequisites for Admission. Applicants to this program shall possess a baccalaureate degree which includes sixteen (16) semester hours (twenty-four quarter hours) of biological science (with one semester in microbiology); sixteen (16) semester hours (twenty-four quarter hours) of chemistry (with one semester in organic or biochemistry); and one semester (one quarter hour) of mathematics. Prior experience in hospital blood banking is desirable. The directors of the program will rule on the acceptability of the work experience.

Application Procedures. Applications should be submitted by 1 October, and must contain the following:

1. A completed Duke University Medical Center Allied Health application form, including a nonrefundable processing fee;
2. Two copies of the American Association of Blood Banks Educational Program for Specialist in Blood Bank Technology application form;
3. If certified, a notarized copy of the certificate from the certifying agency;
4. Official transcripts from all colleges and universities attended;
5. Three letters of recommendation are required. Two professional references, at least one of which must be provided by a present employer and one character reference from a source of your choice should be submitted to the Education Coordinator.
6. A written statement of interest in further education in blood banking and this program;
7. A personal interview with members of the Admissions Committee, if requested, following the receipt of the application forms and other requested information.

Requests for information and application forms should be directed to the Education Coordinator, Specialist in Blood Bank Program, Box 2929, Duke University Medical Center, Durham, North Carolina 27710.

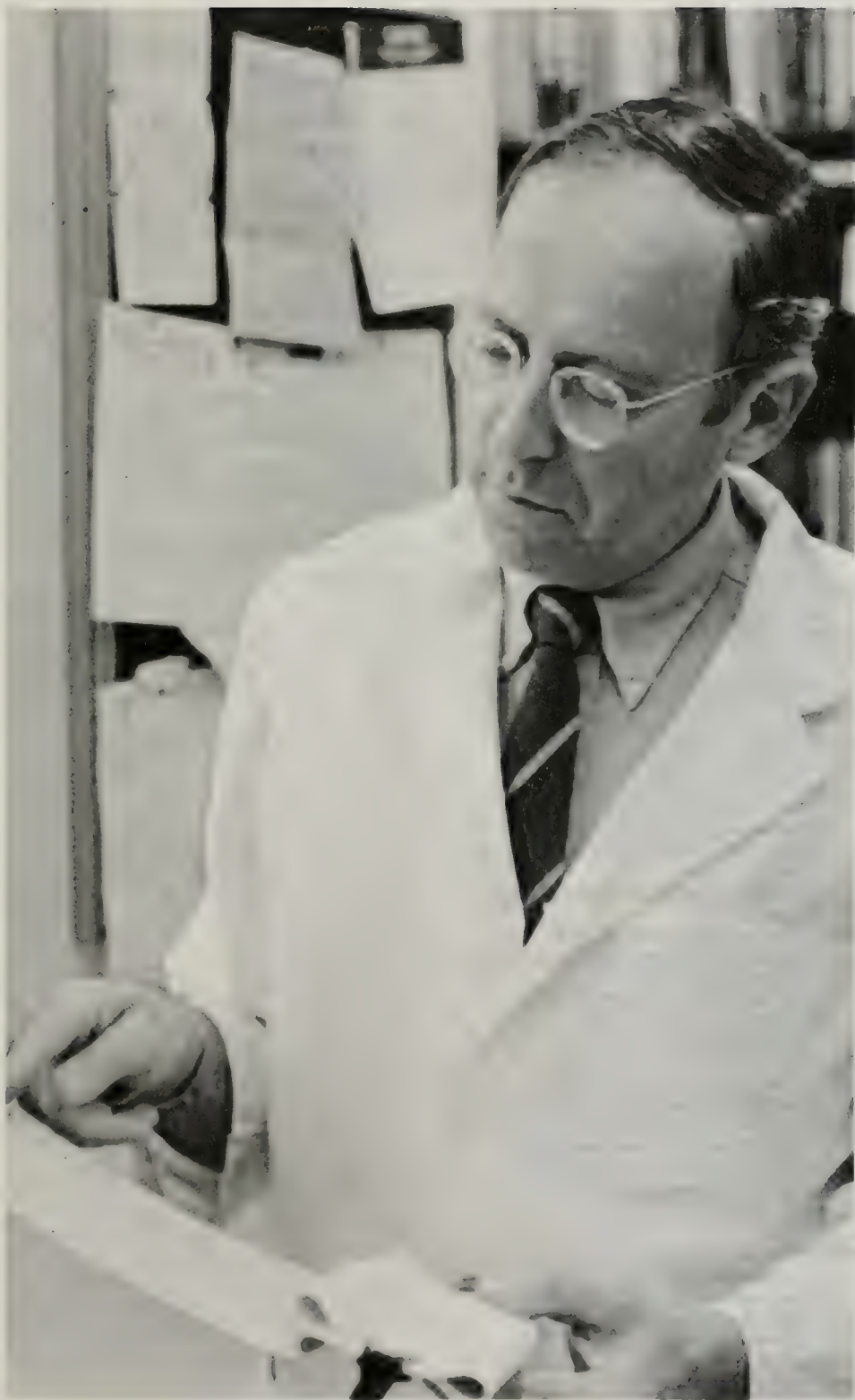
Fees and Expenses. Tuition for the program is \$2,000,* payable in two installments, at matriculation and in September. The Student Health fee is \$333 per year. The student is responsible for housing, board, books, student health fee, and insurance.

Financial Aid. Each student accepted into the SBB program is eligible to receive funding from the department. The amount of funding will be determined on a yearly basis. Please also refer to the section on student aid in the "The Allied Health Programs" chapter.

Courses of Instruction. Students must complete the following courses and clinical rotations:

<i>Course Title</i>		<i>Contact Hours</i>
SBB 101A	Immunology	20
SBB 101B	Genetics	18
SBB 102A	Coagulation, Component Therapy	23
SBB 102B	Hematology	11
SBB 103	Human Blood Groups	39
SBB 104	Special Topics in Blood Banking, Quality Assurance	18
SBB 106	Educational Techniques	18
SBB 107	Management/Supervision	18
SBB 108	Seminars in Transfusion Medicine	50
SBB 109	Clinical Laboratory Rounds	150
<i>Clinical Rotations</i>		<i>Weeks</i>
SBB 110	Transfusion Service/Compatibility Laboratory	12
SBB 111	AABB Accredited Immunohematology Reference Laboratory	12
SBB 113	HLA Laboratory	2
SBB 114	Triangle Center Red Cross	8
SBB 115	Research	4

*Subject to change without prior notice.

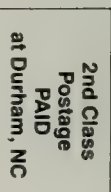


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1988-89

The Fuqua School of Business



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1988-89

The Fuqua School of Business

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The information in this bulletin applies to the academic year 1988-89 and is accurate and current, to the extent possible, as of August 1987. The University reserves the right to change programs of study, academic requirements, teaching staff, the calendar, and other matters described herein without prior notice, in accordance with established procedures.

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Dean Thomas F. Keller

The Fuqua School of Business Calendar*

1988

August	
24-26	Orientation and registration
29	Fall classes begin
September	
5	Labor Day, classes in session
October	
15-18*	Fall break
November	
24-27	Thanksgiving break
December	
9	Classes end
11-17	Examination period

1989

January	
16	Spring classes begin
March	
13-17	Spring break
April	
28	Classes end
30	Examination period starts
May	
6	Examination period ends
14	Commencement

*Dates of the 1988-89 calendar are subject to change by the Provost of Duke University during the 1987-88 year.

A Message from the Dean

In his indenture establishing Duke University, James Buchanan Duke stated his desire that the University excel in the teaching of medicine, religion, and business. The Board of Trustees of Duke University, in 1969, established the Graduate School of Business Administration with a mandate to provide programs in management education of the highest quality. In 1980 the school was renamed to honor J. B. Fuqua of Atlanta, Georgia, who is an emeritus member of both the University's Board of Trustees and the Fuqua School's Board of Visitors. Mr. Fuqua continues to support the school through his generosity and his participation in its programs.

The mission of the Fuqua School of Business is to enhance the practice of management through education and research. Our approach is to prepare men and women to meet their career opportunities with a strong educational background and with an awareness of the need for initiative and leadership when faced with business challenges. We seek students who possess high academic standards and who also demonstrate the ability to think creatively. These are important qualities for business leadership and are reflected in the orientation of our entire program. As a school, we are committed to retaining our flexibility and our responsiveness to management needs as they arise in the business community.

Our heritage at Duke is a tradition of excellence in education. At the Fuqua School we have built on this heritage to develop programs which will enable graduates to meet the challenges of leadership in business, government, and educational organizations.



Thomas F. Keller
Dean

General Information



Duke University

In 1839 a group of citizens from Randolph and adjacent counties in North Carolina assembled in a log schoolhouse to organize support for a local academy founded a few months earlier by Brantley York. Prompted, they said, by "no small share of philanthropy and patriotism," they espoused their belief that "ignorance and error are the banes not only of religious but also civil society which rear up an almost impregnable wall between man and happiness." Union Institute, which they then founded, was reorganized first in 1851 as Normal College to train teachers, and eight years later as Trinity College, a liberal arts college, which later moved to the growing city of Durham, North Carolina. With the establishment of the James B. Duke Indenture of Trust in 1924, Trinity College became Duke University. Today, Duke is a two-campus institution with a student body of about 9,000, of whom 3,000 are enrolled in the graduate and professional programs. Established in 1969, the Graduate School of Business Administration joined the Schools of Medicine, Nursing, Law, Engineering, Divinity, and Forestry in preparing qualified individuals for professional leadership and developing excellence in education for the professions.

The Campus. The main campus (West) of Duke University is a beautifully designed complex of buildings in Gothic architecture, bordered on the east by the Sarah P. Duke Gardens and on the west by the 8,000-acre Duke Forest. This campus is dominated by the Duke Chapel, whose 210-foot-high tower houses a 50-bell carillon. The William R. Perkins Library is one of the largest research libraries in the country. The new facility for the Fuqua School of Business is located on West Campus near the intersection of Science Drive and Towerview Drive. The East Campus is a smaller complex of Georgian-style buildings and has, as major points of interest, the Duke University Museum of Art and the Mary Duke Biddle Music Building.

Durham is a part of the Research Triangle, an area formed by Duke University, the University of North Carolina at Chapel Hill, and North Carolina State University at Raleigh. The Research Triangle Park, a 5,400-acre campus for research laboratories, governmental agencies, and research-oriented industries, is recognized as one of the world's leading science centers. Durham, located near the center of the state, has easy access to the Great Smokies of the Appalachian Mountains and to the scenic and historic beaches of the Outer Banks. The area offers varied cultural and recreational activities ranging from concerts, opera, dance, theater, and recitals to intramural and collegiate sports, boating, skiing, camping, and other outdoor activities.

The Fuqua School of Business. Recognizing the importance of business education, Duke University's Board of Trustees established the Graduate School of Business in 1969, with the mandate to provide management education programs of the highest quality. The school began with two programs; an undergraduate major in management science, and a fledgling M.B.A. Program that graduated its first class of twelve students in 1972. Since that time, the school has grown to include five major academic programs, a faculty of fifty-three, and almost 700 masters degree candidates enrolled in daytime and executive M.B.A. programs. The school also offers a wide range of nondegree executive education programs and seminars.

J. B. Fuqua, Chairman of Fuqua Industries, Atlanta, Georgia, has supported the school generously in its development. In honor of Mr. Fuqua's contribution to the school and personal participation in its growth, the school was renamed the Fuqua School of Business in 1980 by proclamation of the Board of Trustees.

In January of 1983, the Fuqua School of Business moved into its new building on Science Drive on Duke University's West Campus. This building, designed by Edward Larrabee Barnes, offers one of the finest settings for management education in the United States. The 140,000 square feet of space provides for the instruction of M.B.A. students in a variety of degree programs as well as for year-round executive education programs.

The building is constructed in two wings. One wing, primarily designed for M.B.A. education, includes six amphitheatre-style classrooms, the 500-seat Harold S. Geneen Auditorium, a library completely devoted to management education, and numerous seminar and breakout rooms. The second wing is devoted to executive education, and features the R. J. Reynolds Executive Auditorium, dining and lounge facilities, and small group meeting rooms.

Resources of the University

The Library System. The libraries of the University consist of the Perkins Library system and three professional school libraries: the Fuqua School of Business Library, the Law Library and the Medical Center Library. The Perkins Library system includes the main library of the University, the William R. Perkins Library, and nine branches: Biology-Forestry, Chemistry, Divinity, the East Campus library, Engineering, Music, Math-Physics, the Undergraduate Library, and the Pearse Memorial Library at the Duke Marine Laboratory in Beaufort. As of June 1986, Duke libraries contained approximately 3,546,000 volumes and ranked nineteenth in size among academic libraries in the United States. More than 10,000 periodicals, 11,000 serials, and 170 newspapers are received regularly. The collection includes more than 7,450,000 manuscripts, 85,000 maps, 40,000 sheets of music, and 651,000 microforms.

The William R. Perkins Library. The William R. Perkins Library—the main library of the University—houses most of the books and journals in the humanities and social sciences, large files of United States federal and state documents, public documents of many European and Latin American countries, publications of European academies and learned societies, and special collections from South Asian, Far Eastern, and Slavic countries. The newspaper collection, with 90,000 nineteenth-century New England papers and antebellum and Civil War papers from North Carolina, South Carolina, and Virginia, as well as many European and Latin American papers. The manuscript collection of approximately five million items is particularly strong in all phases of life in the South Atlantic region. It also includes significant papers in English and American literature. The rare books collection contains materials covering a broad range of fields, and the Latin and Greek manuscripts constitute one of the outstanding collections in the United States. The collection of Confederate imprints is the largest in the country.

Tours of the Perkins Library are given frequently during orientation week and upon request throughout the year. Information about other campus libraries may be obtained from the staff in each of the libraries. Handbooks about library services and facilities are also available in each of the libraries.

The Fuqua School of Business Library. The FSB library houses the principal business collections for the University, and includes books, journals, and working papers in accounting, entrepreneurship, finance, human resources management, industry studies, information science, international business, managerial economics, marketing, organizational behavior, and operations management. The library's collections are tailored to the needs of the students and faculty of the Fuqua School and, since the library was established in 1983, most of the materials are recent editions. As of June 1987, the library houses 13,000 volumes of books, 300 current periodical subscriptions, 200,000 microforms, and a comprehensive business reference collection. The library also houses several special collections, including annual and 10k reports on microfiche, computer software, and career placement materials.

The FSB library searches all major computerized databases, such as Dow-Jones News/Retrieval and over 200 databases on the Dialog and BRS systems, which cover the spectrum of business research. The library's online catalog locates books in all Duke libraries, as well as in the libraries at neighboring universities. In addition, the library has online access to other computer systems that locate books and journals in other libraries, and obtains these materials on loan for FSB faculty and students.

Library services also include a journal contents alerting service for faculty and library instruction for faculty and students. To assist MBA students, librarians are available business hours Monday through Friday. Additional hours of reference are available during the evenings or on weekends for EMBA and WEMBA students.

During orientation week, tours are offered covering the library's collections and services. In addition, brochures and bibliographies describing the library's collections and services are available at the circulation desk.

Computing Resources. The Fuqua School's Computer Education Center has responsibility for all instructional, research, and administrative computing efforts throughout the school. For student use, the center maintains two student computer laboratory areas: one contains 41 IBM Personal Computers and the other contains 24 Unisys B26 workstations (10 of which are situated in small group "team rooms.") Each laboratory area is tied together in a local area network, and each includes laser printing facilities. A wide variety of personal computer-based software is available via electronic distribution over local area networks and by checking out software diskettes from the school's library.

The Computer Education Center also maintains an IBM 4341 mainframe for faculty research computing, elective M.B.A. coursework, and administrative data processing. All offices and classrooms in the Fuqua School building, along with some of the student-use PCs, are interconnected through a data network tied to the IBM 4341 system. A variety of mainframe software systems for database management, statistical analysis, high-level language programming, and expert systems development are available on the IBM 4341 for large-scale business computing.

Taken together, the computing facilities of Duke University as a whole and of the Fuqua School, in particular, add up to an impressive wealth of resources relative to the size of the school. More important, the Fuqua School's Computer Education Center fosters a dynamic computing environment characterized by ongoing efforts to expand and improve the computing resources available to students and faculty.

Programs of Study



The Master of Business Administration Programs

The Duke M.B.A. Program prepares individuals for challenging management jobs in the private sector. The program emphasizes the understanding and application of analytical tools and concepts drawn from a broad array of management fields of inquiry. The student is asked to structure unstructured situations and to propose solutions to complex problems. By studying analytical tools, theories, and examples, the student learns to identify the common threads in seemingly different business situations and to grasp the essential nature of unfamiliar management problems.

The teaching styles adopted by the faculty vary. In some courses, lectures are the rule. In others, the case method predominates. In still others, there is a mix of many styles, including role playing and student presentations. Depending on the course, the work done outside of class is likely to consist of (1) reading texts or articles, (2) working problem sets, (3) researching and writing papers, or (4) preparing cases and discussing them in small study groups.

The school has made a deep commitment to the use of the computer in business education. Students are required to master word processing, spread-sheet programs, and some statistical packages on microcomputers. A number of courses require the use of these newly developing managerial skills. Likewise, the school is also committed to improving the communications skills of its students. The business communications curriculum does not stand by itself, but has been carefully integrated into other course work.

In these ways and others, the school is determined to stay in the forefront of business education.

The Fuqua School of Business is fully accredited by the American Assembly of Collegiate Schools of Business and is a member of the Graduate Management Admission Council.

OUTLINE OF THE CURRICULUM

The M.B.A. degree requires four semesters of full-time work totaling 63 units of graduate course credit. Students who are exceptionally proficient in a particular subject will be allowed to substitute advanced course work for one or more core courses. There are no summer sessions for students in the M.B.A. program.

Modern management often requires analytical reasoning which focuses on precise statements of relationships between variables. In contemplating the future, concepts of probability become especially important. For these and other reasons much of our course work assumes a firm grasp of mathematical concepts. We strongly encourage each applicant to come prepared with the necessary background. A working knowledge of calculus is essential. Evidence of this preparation is required for admission.



The First-Year Program. Course work in the first year is designed to provide the basic knowledge and tools of analysis for the operations of business organization. In the second semester of the first year, students are introduced to the functional areas of the firm. The first-year program includes:

Fall Semester

BA 300	Managerial Economics	3 units
BA 311	Statistical Analysis for Management	3 units
BA 312	Quantitative Analysis for Management	3 units
BA 320	Organization Behavior	3 units
BA 330	Financial Accounting	3 units
BA 318	Computer Laboratory	1 unit
		<hr/>
		16 units

Spring Semester

BA 301	Economic Environment of the Firm	3 units
BA 331	Managerial Accounting	3 units
BA 350	Financial Management	3 units
BA 360	Marketing Management	3 units
BA 370	Operations Management	3 units
BA 388	Business Communication	2 units
		<hr/>
		17 units

The Second-Year Program. The second year of the M.B.A. program consists of one required course and nine electives. The required course, BA 340, Business Policy and the Management Experience, stresses the application of knowledge gained in the first year to the overall management process, to the integration and coordination of various func-

tions, and to strategy formulation and implementation. One feature of the course is the playing of a management game. The game places teams of students in key management positions of firms which compete in a simulated market environment. Student teams are responsible for the organizational structure and decision making in marketing, production, finance, and personnel. Each student team reports to a board of directors composed of faculty and business executives from the community.

The nine electives allow the students to develop additional depth in functional areas and freedom to concentrate their studies in a specific area of interest. Of the elective courses, one must be chosen from the environmental field which deals with the managerial implications of the economic, legal, social, and political environment of the firm. The courses satisfying this requirement are BA 342, BA 343, and BA 345. Students enrolled in the M.B.A./J.D. program are exempt from this requirement. The student may also elect up to four courses from other graduate and professional schools at Duke, or neighboring institutions in a reciprocal agreement with Duke. This allows the development of an individual program consistent with career goals.

The second-year program includes:

Fall Semester		
BA 340	Business Policy and the Management Experience	3 units
	Electives	12 units
		<hr/>
		15 units
Spring Semester		
	Electives	15 units

M.B.A. with an Accounting Concentration

Thanks to extensive financial support from the major public accounting firms, the Fuqua School of Business offers an M.B.A. degree with a concentration in accounting. Although Fuqua School students are not required to designate a major as part of the completion of the M.B.A. degree, those interested in professional careers in accounting may choose to concentrate in this area. Students who elect to pursue the concentration in accounting usually do so with the intent of entering the accounting profession and taking the CPA exam immediately after the completion of their degree. Certified Public Accountants are licensed by individual states, all of which use the Uniform CPA Examination. This entry level examination necessitates that students take a specified curriculum in order to be adequately prepared. Additional course requirements may be imposed by specified states for licensing in addition to those courses in the accounting concentration. Students enrolling in the program should determine the particular licensing requirements of the individual states in which they are interested in residing.

The Doctor of Philosophy Program

The Ph.D. in Business Administration Program prepares candidates for research and teaching careers at leading educational institutions and for careers in business and governmental organizations where advanced research and analytical capabilities are required. The Ph.D. program places major emphasis on independent inquiry, on the development of competence in research methodology, and on the communication of research results. Students are introduced at the outset of the program not only to rigorous course work, but also to the research activities of the faculty and of other students. (A ratio of doctoral students-in-residence to faculty of less than one to one facilitates this opportunity to work closely with faculty.)

The program requires that doctoral candidates must acquire expertise in their chosen area of study and in research methodology. This competence may be gained from course work, participation in seminars, and independent study. Each student takes a comprehensive exam at the end of the second year or the beginning of the third year of residence. The final requirement is the presentation of a dissertation. The Ph.D. program usually requires four years of work beyond the bachelor degree. The student and his/her faculty committee determine the specific program of study, subject to the approval of the Director of the Doctoral Program.

Special Programs

CONCURRENT DEGREE PROGRAMS

The Fuqua School of Business offers combined degree programs with the School of Law, the School of Forestry and Environmental Studies, and the Institute of Policy Sciences and Public Affairs. By recognizing certain areas of study common to the M.B.A. and each of the other advanced degrees, duplication of instruction is eliminated and students are able to obtain the concurrent degrees in less time than would normally be required to obtain the two degrees separately. Students are normally required to take 51 units of business administration course work following admission to a concurrent degree program.

The M.B.A.-J.D. The concurrent M.B.A.-J.D. program requires four academic years of study with a full year in each school and two years of combined study that meets the requirements for both the M.B.A. and J.D. degrees. Students must apply for admission and be accepted by both the School of Law and the Fuqua School of Business. Additional information on the program may be obtained from the Director of Admissions, the Fuqua School of Business, Duke University, and the Admissions Office, Duke University School of Law.

The M.B.A.-M.F. and the M.B.A.-M.E.M. The concurrent Master of Business Administration and Master of Forestry or Master of Environmental Management degrees normally require three years of study. Students must apply for admission and be accepted by both the School of Forestry and Environmental Studies and the Fuqua School of Business. Additional information on the program may be obtained from the Director of Admissions, the Fuqua School of Business, Duke University, and the Director of Admissions, Duke University School of Forestry and Environmental Studies.

The M.B.A.-A.M. in Public Policy Sciences. The concurrent Master of Business Administration degree and Master of Arts degree in Public Policy Sciences normally requires two and a half to three years of study. The joint degree curriculum requires a minimum of thirty credits to be specified by the Institute of Policy Sciences and Public Affairs, and fifty-one credits to be specified by the Fuqua School of Business. Students must apply to and be accepted by both the Fuqua School of Business of Duke University and the Graduate School of Duke University. Additional information may be obtained from the Director of Admissions, the Fuqua School of Business, Duke University, and the Director of Graduate Studies, Institute of Policy Sciences and Public Affairs.

Public Policy Option. For those students interested in management careers in the public or not-for-profit sectors the Fuqua School of Business offers a public policy option. This option consists of a recommended set of M.B.A. elective courses to be taken in the Institute of Policy Sciences and Public Affairs. Students interested in pursuing this option must obtain the consent of the institute's faculty adviser of M.B.A. students and the consent of the M.B.A. program director.

COMBINED UNDERGRADUATE-PROFESSIONAL DEGREES

Also known as the "three-two" program, the combined undergraduate-professional degree program provides that the Bachelor of Science or Bachelor of Arts degree may be awarded to students who successfully complete three years in an approved curriculum in arts and sciences at Duke and also the first year of study for the Master of Business Administration. After two years at Duke and before transfer to the Fuqua School of Business, students may apply for the three-two program through their academic dean. To be eligible for the combined program a student must successfully complete all baccalaureate requirements (except eight elective courses) and be admitted to the business school. Upon satisfactory completion of the first two semesters in the Fuqua School of Business, the student will be awarded a baccalaureate degree. The M.B.A. degree is awarded upon completion of the second year of the program.

EXECUTIVE M.B.A. EVENING PROGRAM

The Fuqua School of Business offers an M.B.A. degree for practicing managers in the greater Durham-Raleigh area. The program is designed for those who are seeking a broad educational base as preparation for more senior managerial positions, while continuing full-time job responsibilities. Major objectives of the program are to improve decision-making and management skills, and the effective utilization of these skills in resolving contemporary management problems.

The Executive M.B.A. Evening Program requires twenty-five months of study and includes six semesters of course work. A minimum of three years of postbaccalaureate work experience is required in order to be eligible to apply. Students interested in the program should contact the Director of the Executive M.B.A. Evening Program or the Director of Admissions, Fuqua School of Business, Duke University.

EXECUTIVE M.B.A. WEEKEND PROGRAM

The Fuqua School of Business also offers an Executive M.B.A. Weekend Program. The program is tailored to fit the schedule of the fully employed business executive who wishes to complete an M.B.A. degree without career interruption. It offers mature executives a broad perspective on general management responsibilities and includes the tools, concepts, and strategies required for senior leadership.

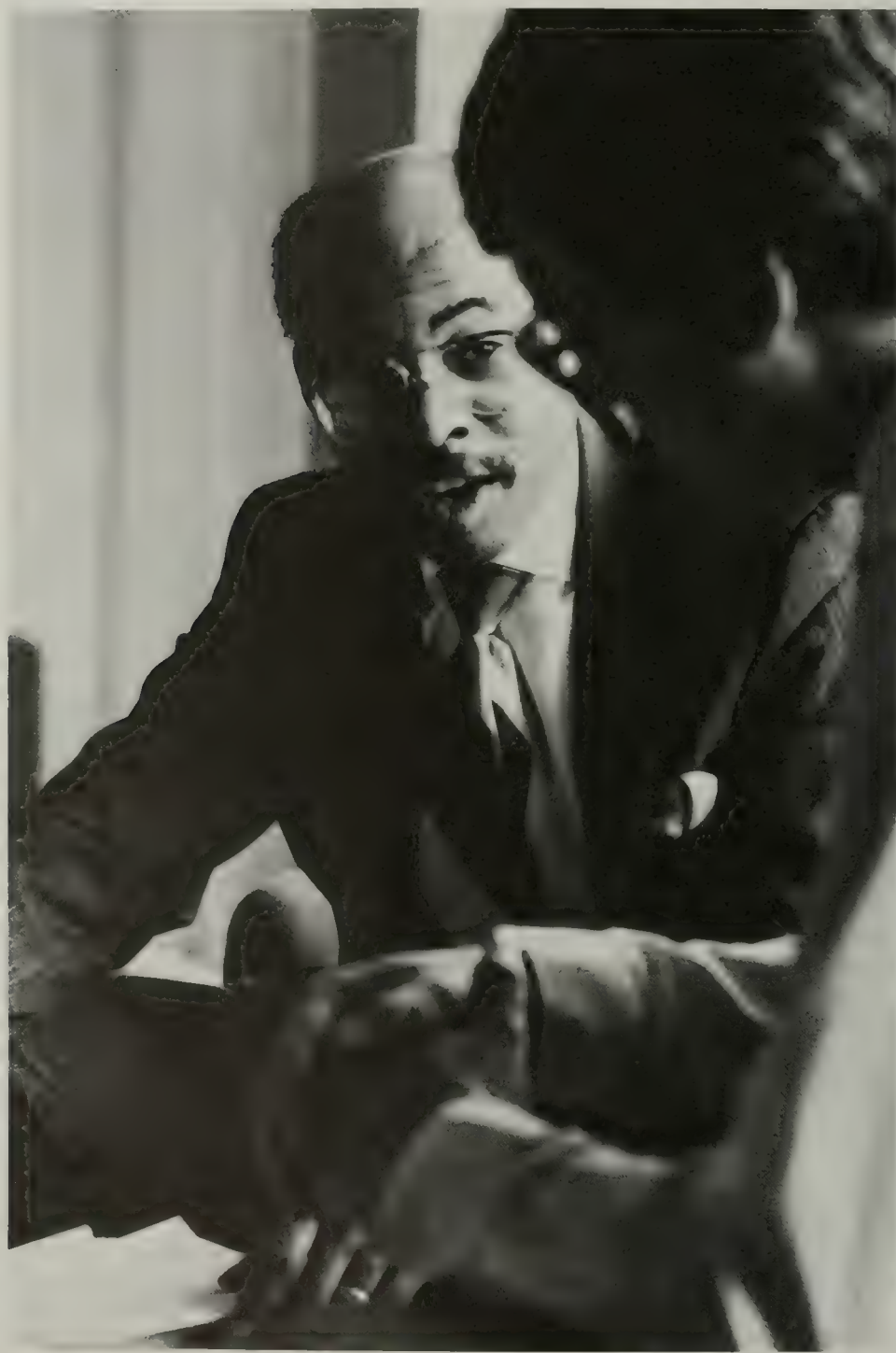
The Executive M.B.A. Weekend Program begins with an orientation program, and then meets Friday-Saturday every other weekend. The program requires twenty months of study and includes five semesters of course work. Students interested in the program should contact the Director of the Executive M.B.A. Weekend Program or the Director of Admissions, Fuqua School of Business, Duke University.

EXECUTIVE EDUCATION

The Fuqua School of Business offers a series of executive education programs designed for senior level executives. The programs vary in length from one week to four weeks and are tailored to the requirements of the participating group. The programs are residential, giving participants maximum involvement with each other and with the faculty. Major programs include a four-week Advanced Management Program and two-week programs in Strategic Human Resources Management, The Management of Capital Expenditures in the Telecommunications Industry, Executive Program for Corporate Counsel, and Strategic Production Management. Other recent offerings have included programs in cash management, and management of technology and innovation.

Further information on the school's executive education programs may be obtained from the Associate Dean for Executive Education, Fuqua School of Business, Duke University.

Admissions



Admissions

Anyone who holds a bachelor's degree from an accredited college or university is eligible to apply for admission to the Fuqua School of Business. No specific undergraduate major is deemed preferable to any other; however, the programs have been designed primarily for persons with training in the liberal arts, engineering, or the sciences. The Admissions Committee seeks those candidates with leadership potential who are prepared to compete successfully in a demanding course of study which requires logical and analytical reasoning. All entering students are expected to have a working knowledge of calculus, and applications are reviewed closely for this ability.

Prior work experience is not considered a requirement for the M.B.A.; however, the Admissions Committee recognizes the value of full-time work experience and considers it a positive factor in admission decisions.

Application Information. Complete instructions for filing an application are included with each application packet. Each applicant must submit the following to the Admissions Office before action can be taken:

1. **Application Form:** Careful completion of the application will ensure a thorough evaluation. Since it is desirable that the application be as complete as possible, additional sheets should be used if necessary.
2. **College Transcripts:** An official transcript from each of the colleges *attended* must be sent to the Admissions Office. Students who apply during their senior year must ensure that a final transcript be received by the business school prior to enrolling.
3. **Letters of Recommendation:** Three letters of recommendation are required and must be sent to the Admissions Office. Recent graduates or those in their senior year should have at least one letter submitted from persons familiar with their academic ability. Recommendations should be academic or professional, not personal.
4. **Graduate Management Admission Test:** Score reports must be sent directly from the Educational Testing Service to the Fuqua School of Business.
5. **Application Fee:** A nonrefundable fee of \$50 to cover processing must be submitted with the application.

Any questions or requests for application materials should be addressed to the Director of Admissions, The Fuqua School of Business, Duke University, Durham, North Carolina 27706, telephone (919) 684-5874.



Application Deadline. A continuous admissions policy is followed in the Fuqua School of Business in that admission decisions are made as applications are completed. Generally, applications will be reviewed and given a decision approximately six weeks after receipt. Application credentials should be on file in the school by April 1. Students completing applications prior to December 1 are eligible for early decision consideration and will receive decisions no later than January 31. The application file must be complete before action can be taken. A limited number of places in the class are available for applications completed after April 1; therefore, those wishing to apply after the normal deadline may do so, but it is to an applicant's advantage to apply early.

Notification of Status. When the applicant has been accepted, a letter of admission and an acceptance form will be sent. A nonrefundable tuition deposit of \$500 will be required to reserve a place in the class. The process of admission is not complete until the statement of acceptance and the tuition deposit have been returned to the Director of Admissions.

Applicants notified of acceptance prior to March 15 will be expected to make the \$500 tuition deposit by April 15. Applicants notified of acceptance after that date will be expected to make the tuition deposit within three weeks of the notification, or the place in the entering class will be forfeited. It should be reiterated that the tuition deposit is in all cases nonrefundable.

Graduate Management Admission Test. The Graduate Management Admission Test, required of all applicants, is administered by the Educational Testing Service. Detailed information about the test and application forms may be obtained by writing directly to the Educational Testing Service, Box 966, Princeton, New Jersey 08540.

The examination is administered at many centers throughout the United States and abroad. Arrangements to take the test at an established center must be made four weeks before the test date (six weeks prior to test date at established foreign centers). The ex-

amination is given four times a year. Special centers may be arranged for persons distant from established centers. Requests for such accommodations must be made at least eight weeks prior to the selected test date. Applicants are encouraged to take the test in October or January; those taking the test in March or June run the risk of having the class already filled by the time scores are available.

Admission of Foreign Students. Fully qualified students from outside the United States are welcome at the Fuqua School of Business. In applying for admission, the foreign student should submit, in addition to the above credentials, the following:

1. If the native language is not English, the results of the Test of English as a Foreign Language (TOEFL) must be submitted. Most successful applicants score approximately 600 or better on the TOEFL.
2. A statement certified by a responsible person that finances are sufficient to maintain the student during the stay at Duke University. The University does not at the present have fellowship or loan programs for foreign students.
3. A statement by a qualified physician describing the physical and mental health of the applicant.

The M.B.A. program is a two-year program and all students are expected to complete the required course work in the allotted time period. Foreign applicants should be prepared to carry the normal course load as described earlier in the bulletin. For this reason, applicants whose native language is not English should consider the merits of attending an intensive English language program or enrolling in summer school courses at a university in the United States prior to enrolling at Duke. Since the course work in the program will involve lectures, discussions, and group projects, a firm understanding of the language is required.

Financial Information



Tuition and Fees

The tuition for students in the Fuqua School for the year 1987-88 is \$6,250 per semester. All charges are due and payable at the times specified by the University and are subject to change without notice. A late registration fee of \$25 is charged any student not completing registration during the registration periods. An \$8 charge will be imposed for any student's check returned to the University unpaid.

After the beginning of classes, refunds will be made on a pro rata basis. Students may elect to have tuition charges refunded or carried forward as a credit for later study according to the following schedule:

1. Withdrawal before classes begin: full refund.
2. Withdrawal during the first or second week of classes: 80 percent.
3. Withdrawal during the third, fourth, or fifth week of classes: 60 percent.
4. Withdrawal during the sixth week: 20 percent.
5. Withdrawal after the sixth week: No refunds.

Tuition or other charges paid from grants or loans will be restored to those funds not refunded or carried forward.

If for any reason during the program, a student should find it necessary to request a reduction in the normal course load, this request will be reviewed by the Program Director. If the Program Director approves a reduction in the course load, the student has the right to request a corresponding reduction in tuition charges. These requests will be considered only for those students for whom the course reduction will necessitate enrollment in the Fuqua School in excess of four semesters for M.B.A. students or six semesters for Executive M.B.A. students. Students receiving approval for a tuition reduction will be charged on a pro rata basis.

Payment of Accounts. Duke University does not have a deferred payment plan for tuition, fees, and other charges. Following first enrollment in the Fuqua School, monthly invoices are sent each student by the Bursar's office. As a part of the agreement of admission to Duke University a student is required to pay all invoices as presented. A late payment charge will be assessed for all charges not paid in full by the due date, and certain restrictions may be applied. All students are charged the student health fee and student accident and sickness insurance coverage unless they file properly completed and signed waivers in the Bursar's office by the invoice due date.

Late Payment Charge. If the total amount due on the student's invoice is not received by the Bursar by the invoice due date, a penalty charge will be accrued from the billing

date of the invoice. The late payment charge is assessed at a rate of the $1\frac{1}{3}$ percent per month (16 percent per annum) applied to the past due balance. The past due balance is defined as the previous balance less any payments and credits related to the previous balance which appear on the invoice.

Restrictions. An individual will be in default if the total amount due is not paid in full by the due date. A student in default will not be allowed to receive a transcript of academic records, have academic credits certified, or receive a diploma at graduation. In addition, an individual in default may be subject to withdrawal from school.

M.B.A. Association Student Activity Fee. All students are assessed a \$40 nonrefundable fee to be used to support the activities of the M.B.A. Association.

Athletic Tickets. Athletic ticket books are available to graduate students. Purchase is optional, with payment due in the fall semester.

Vehicle Fee. Each student possessing or maintaining a motor vehicle at Duke University shall register it at the beginning of the academic year in the Duke Public Safety Office at 2010 Campus Drive. A student who acquires a motor vehicle and maintains it at Duke University after academic registration must register it within five calendar days after operation on the campus begins. Resident students are required to pay an annual fee for each motor vehicle.

At the time of registration of a motor vehicle the following documents must be presented: state vehicle registration certificate, valid driver's license, and a student identification card.

Transcript Fee. Students who wish to obtain copies of their academic records should direct requests to the registrar's office, 103 Allen Building. Ten days should be allowed for processing. A fee of \$1, payable in advance, is charged for each transcript copy.

Student Health Fee. All students are assessed a nonrefundable fee for the Student Health Service. The fee for 1987-88 is \$214 (\$107 per semester).

Student Accident and Sickness Insurance. The University has made arrangements for a Student Accident and Sickness Insurance Plan to cover all full-time students for a twelve-month period. For an additional fee a student may obtain coverage for a spouse and children. Although participation in this program is voluntary, the University requires all graduate students to be financially responsible for medical expenses above those covered by the University Student Health Program through the University Accident and Sickness Policy, a private policy, or personal financial resources. Students who have equivalent medical insurance or wish to accept the financial responsibility for any medical expense may elect not to take the Duke plan by signing a statement to this effect. *Each full-time student in residence must purchase this student health insurance or indicate the alternative arrangement.* The Student Accident and Sickness Insurance Policy provides protection twenty-four hours per day during the full twelve-month term of the policy for each student insured. Students are covered on and off campus, at home, while traveling between home and school, and during interim vacation periods. The term of the policy is from the opening day of school in the fall. Coverage, services, and costs are subject to change each year as deemed necessary by the University. The rates for 1987-88 are estimated at: student only—\$250 per year; and family plan (student, spouse, and children)—\$700 per year.

Living Expenses. The estimated living costs for the 1987-88 academic year are \$6,823 for a single student and \$11,193 for a married student. These estimates include room and board, and allowances for transportation and miscellaneous personal expenses.

Debts. No records are released until students have settled with the Bursar for all indebtedness. Failure to pay all University charges on or before the times specified by the University will bar the student from class attendance until the account is settled in full.

Students are expected to meet academic requirements and financial obligations, as specified elsewhere in this bulletin, in order to remain in good standing. Certain nonacademic rules and regulations must be observed also. Failure to meet these requirements may result in dismissal by the appropriate officer of the University.

Financial Aid

The Fuqua School of Business endeavors to make it possible for qualified students to attend Duke even though their own resources may be insufficient. Financial aid is available in the form of fellowships and various loan programs. Applicants are expected to make use of personal savings, veterans' benefits, summer income, and loans from family and other outside resources prior to requesting aid.

The Fuqua School of Business Fellowships. Each year a number of fellowships are available to incoming students. In general, the criteria for selection are prior academic achievement, demonstrated qualities of leadership, involvement in extracurricular activities and professional accomplishments. The awards are for two years of graduate study, ranging from partial tuition to full tuition. Requests for fellowships should be filed no later than March 1 to receive full consideration.



Named Gift Fellowships. The following awards are among the named gift fellowships offered by the Fuqua School of Business.

A. F. Calabrese Scholarships. John J. Mack, A.B. 1968 and a member of the Board of Visitors, established this endowed fund to honor A. F. Calabrese. The fund provides scholarships for students enrolled in the Fuqua School of Business who participated in intercollegiate athletics, preferably at Duke or the Catholic University of America.

General Motors Scholarships. Established in 1987 by the General Motors Foundation, awarded to students who demonstrate outstanding academic achievement and leadership qualities and have significant business experience.

Herman and Johanna Vander Weide Scholarships. This endowed fund was established by James H. Vander Weide, Research Professor at the Fuqua School of Business, in honor of his parents. The scholarship is awarded to a deserving Fuqua student.

Howard C. Ris Scholarships. This scholarship is awarded to a Fuqua student who has demonstrated ability and potential. This endowed scholarship is made possible by a gift from Howard C. Ris, (A.B. 1938) retired chairman of Ris Paper Company, Inc.

John W. Rollins Scholar. This scholarship/loan award is given annually to five second-year students. Rollins Scholars possess outstanding leadership qualities and strong records of academic achievement. This award was established in 1987 by John W. Rollins, Sr., Chairman and Chief Executive Officer of RLC Corporation, Wilmington, Delaware.

Unisys Corporation Scholarships. The recipients of this award are outstanding second-year students who have exhibited executive potential as reflected in participation in academics, student organizations, athletics, and work experience. Five Unisys Scholars are selected annually.

William A. and Anne L. Klopman Scholarships. This endowment fund was established by a donation from William A. and Anne L. Klopman, parents of three Fuqua graduates. Klopman is retired Chairman of Burlington Industries and is a member of the Fuqua Board of Visitors. the scholarship is awarded to a deserving Fuqua student.

Xerox Scholarship Fund. Established in 1987, the Xerox Scholarship Fund recognizes outstanding academic achievement and leadership.

Pennwalt Foundation Scholarships. Established in 1986 by the Pennwalt Foundation, these scholarships recognize outstanding academic achievement.

Junior Achievement Scholarships A grant from the Little Family Foundation supports two awards annually having a stipend of \$5,000 each. These scholarships are given to company participants who have two or more years of full-time work experience.

Martin L. Black Fellowships. Established in 1974 through the gifts and donations of alumni and friends of Martin L. Black, Professor Emeritus and a faculty member in accounting at Duke for over forty years, these fellowships are awarded to M.B.A. students who plan to concentrate in accounting.

Mead Scholarship. These scholarships, established in 1977 by the donation of Mr. D. Richard Mead, Jr. (A.B., 1952), are given to students who, without such support, might otherwise not be able to afford the cost of continued graduate study.

P. Huber Hanes Scholarships. Established in 1939, through the donation of Mr. P. Huber Hanes, these scholarships are given annually to two Duke students admitted by the Fuqua School into the combined undergraduate-professional degree program (also known as the "three-two" program). One scholarship is given in the name of P. Huber Hanes and one is given in the name of P. Huber Hanes, Jr. These scholarships are given to students who have excelled academically and extracurricularly.

Wachovia Scholarships. These scholarships are awarded to students who show promise of academic excellence and leadership potential. They were established in 1975 by Wachovia Bank and Trust Company.

Loan Programs. The Fuqua School operates long-term loan programs and participates in the college work-study program. These programs are available to students who anticipate a need to supplement personal resources while attending school. Students

who demonstrate need according to federal guidelines and information supplied on a Graduate and Professional School Financial Aid Service (GAPSFAS) form, are eligible to participate in these programs.

Guaranteed Student Loans (GSL). The Guaranteed Student Loan Program, sponsored by the U.S. Department of Education, enables graduate students who qualify on the basis of need to borrow up to \$7,500 per academic year. These funds may be borrowed directly from a bank, credit union, savings and loan association, or other participating lender. Subsidized by the federal government while the student maintains full-time enrollment, the current interest rate for new borrowers is 8 percent for the first four years of repayment and then increases to 10 percent. There is a 5 percent origination fee. The maximum repayment period is ten years. *You must file a Graduate and Professional School Financial Aid Service form (GAPSFAS) to determine qualifications for this loan.*

Perkins National Direct Student Loans (NDSL). The Perkins National Direct Student Loan (NDSL) program is a federally funded, campus-based aid program awarded on the basis of need. The Perkins NDSL program provides a low-interest (5 percent) loan program which is fully subsidized by the federal government during the student's period of enrollment. Repayment of principal and the assumption of 5 percent interest begin nine months after the termination of enrollment on at least a half-time basis. Federal law limits graduate students to a maximum borrowing capacity of \$18,000, inclusive of undergraduate borrowing. These loans are awarded by the Financial Aid Office and are part of a student's loan package.

Supplementary Loans for Students (SLS). This is a federally approved loan program for parents of undergraduates and for independent graduate and professional students, and is also available from a bank, credit union, savings and loan association or other participating lender. The maximum annual loan under this program is \$4,000, with an aggregate limit of \$20,000 for each student. The maximum interest rate is equal to the 91-day Treasury bill rate plus 3.75 percent, with a 12 percent cap, and there is an origination fee as well. Full-time student borrowers under this program can defer principal repayment while in school. However, interest accrual and repayment begin immediately after the note is signed. The treatment of interest payments may vary according to lender policies (some are monthly, some are quarterly).

GradEd Financing. This is a new private educational loan plan specifically designed for full or half-time graduate students pursuing an advanced degree in engineering, law, health professions or business administration. Qualified students may borrow \$1,500 to \$7,500 per academic year, up to a total of \$15,000. Total indebtedness when combined with other student loans may not exceed \$45,000. The interest rate is a variable rate equal to Treasury bill plus 3.5 percent, and students may opt for a flexible, graduated payment plan upon graduation. Students have up to 15 years to repay, depending on the amount of their outstanding loans under the GradEd plan, with only minimum monthly payments of accrued interest (or \$50, whichever is greater) while in school. Full-time students may defer payment of principal and interest for up to four years with a qualified co-maker.

College Work-Study Program. The College Work-Study Program is federally funded and supports the employment of students while they are in school. Students must meet federal need standards to qualify for participation. With work-study, a student's salary is paid jointly by the federal government and the Fuqua School. Funding from this program is available for students only when employed by the Fuqua School. Students given work-study allocations are responsible for securing their own employment within the school, which offers a variety of employment opportunities for interested students.

Financial Aid Application. Financial aid decisions are made as applications are completed, with the first awards being granted beginning in late February. All students applying for financial aid must complete the Financial Aid Application and a GAPSFAS form. The GAPSFAS application may be obtained from the Graduate and Professional School Financial Aid Service, Box 2614, Princeton, New Jersey 08540, and *should be filed*

no later than February 1, in order to ensure its arrival at Duke by March 1. Applications received by March 1, including receipt of the GAPS FAS, will be assured of full consideration for all available resources. Federal law requires verification of income data submitted prior to January 1. Students are therefore encouraged to delay GAPS FAS filing until after January 1. The GAPS FAS contains sections to be completed by the applicant, by the spouse or spouse-to-be, and by the applicant's parents. Applicants who will not be considered independent by federal standards must have the parents' questionnaire section completed. All financial aid applicants are required to provide a *signed copy of their most recent income tax statement* before any loans can be processed. Dependent students must also include a copy of their parents' income tax statement.



Career Services and Placement



Career Services and Placement

The Office of Career Services and Placement initiates a comprehensive program of career planning early in the first year of study. It is recognized that students enter the program with varying degrees of career maturity depending on previous education and experience. Therefore, the career planning program is organized to meet a wide range of developmental needs.

Activities conducted by the Placement Office staff offer the opportunity to move through a logical progression beginning with self analysis, followed by preparation for placement and the summer job search and finally focusing on sophisticated career decision making as it relates to the world of work. The methods used to deliver these services include individual advising sessions, small group and workshop presentations and required large group lectures and seminars.

In the self analysis process, instruction is given and materials are used to allow the student to identify, qualify, and quantify individual skills, interests, and abilities in an in-depth manner. Once defined, these skills and abilities become the foundation for resume writing and the interview process.

Much attention is given to the development of a solid set of credentials and the preparation of personal references. To assure quality resume construction, students attend an instructional session, participate in a resume writing workshop, and receive individual critiques from placement professionals. Upon resume completion, focus is shifted to developing strategies for the job search process beginning with summer internship.

The Placement Office offers opportunities for meaningful summer employment between the first and second year of study through employer interviews on campus, employer referrals to the placement staff and the development of individually guided strategies.

During the second semester, synthesis between skills, interests and abilities, and occupational and career choices is encouraged. To accomplish this, an intensive multiple session workshop for students interested in further career development and decision making is conducted. Additionally, panels utilizing successful professionals and alumni address a variety of career fields and skills, abilities, and experience needed to pursue those careers.

The culmination of the self analysis, job search, and decision making activities followed by the summer internship permits students to begin the second year of study with well developed career decisions prior to the ultimate job search. Since both summer and permanent on-campus recruiting occur only in the spring semester, the office provides ample opportunity for student interface with the corporate community during the fall term.

The Fuqua School's annual Job Fair provides an excellent opportunity for students and employers to discuss job prospects and career responsibilities in a relaxed and informal atmosphere. Second-year students focus on specific careers within a specific industry or company while the first-year class usually gathers as much information as possible on career alternatives. As a result of the program, many students arrive at early decisions concerning their area of interest. The types of firms represented are broad based to offer a variety to the student.

Special Interest Programs (SIPS) allow the employer a more focused setting in which to talk about job opportunities. These programs are usually held late in the afternoon in one of the building's lounges, and usually include a light buffet. The format is very flexible and informal. Most sessions open with prepared remarks or an audio-visual presentation, followed by a question and answer period. The program promotes a mutual give and take situation between students and employers.

The Placement Office also cosponsors programs and events in cooperation with student organizations.

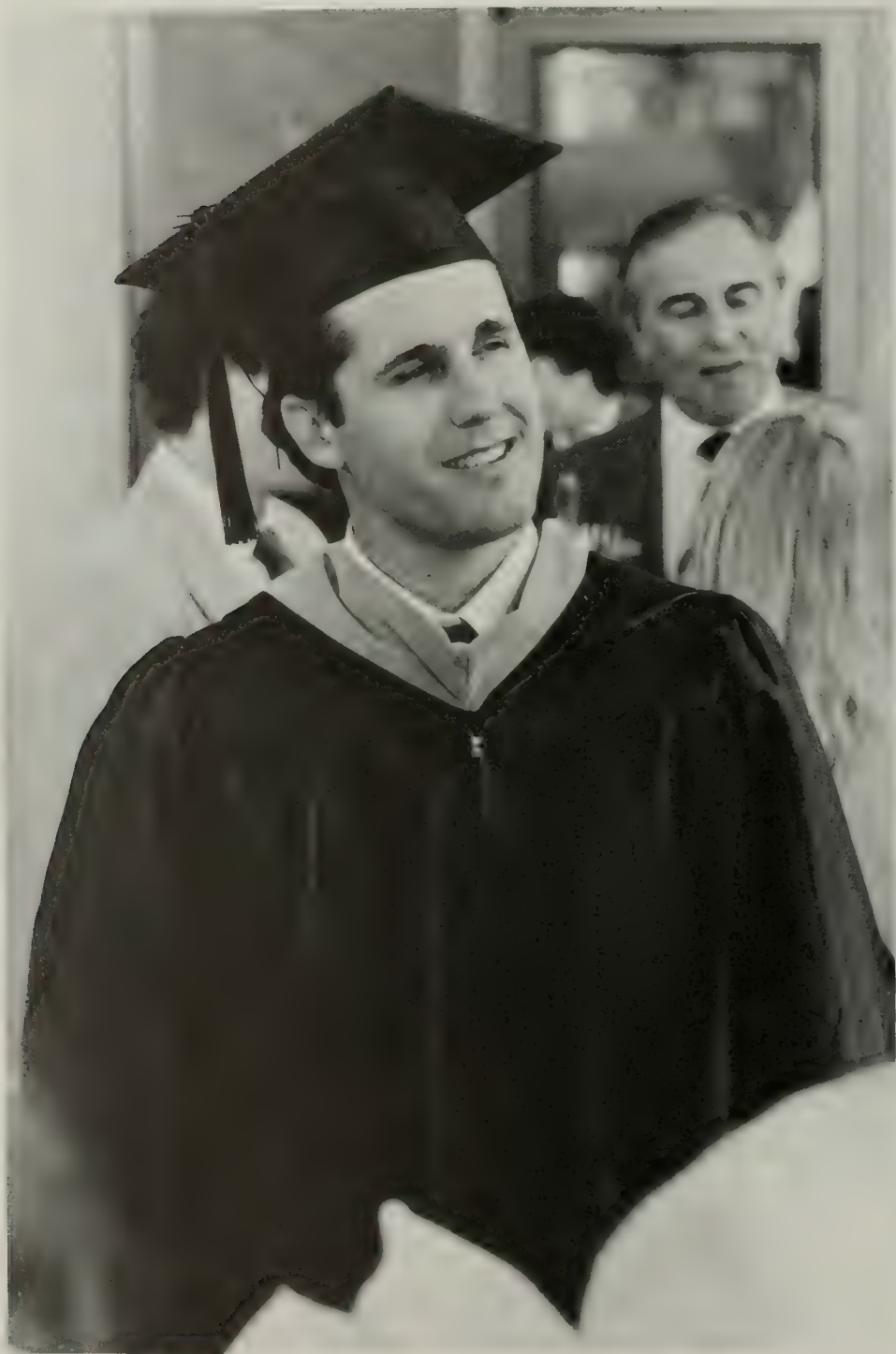
1985-1987 On-Campus Recruiting Organizations

Air Products & Chemicals, Inc.
 Alex. Brown & Sons, Inc.
 Allied Signal Corporation
 Amerada Hess Corporation
 American Airlines
 American Express
 American Management Systems
 American Medical International (AMI)
 Arthur Andersen & Company
 Arthur Young & Company
 AT&T
 Bali Co. (Division of Sara Lee)
 Bank of America
 Bank of Boston
 Bank of New York
 Bankers Trust Company
 Barclays American Corporation
 Barnett Banks of Florida
 Bear, Stearns & Co., Inc.
 Booke & Company
 Booz, Allen & Hamilton, Inc.
 Borg Warner Chemicals
 Burger King Corporation
 Burke Marketing Services, Inc.
 Burlington Industries, Inc.
 C & P Companies (Bell Atlantic)
 Campbell Soup Company
 Campbell Taggart
 Capital Holding Corporation
 Carnation
 Carolina Power & Light Company
 Carolina Securities
 The Chase Manhattan Bank
 Chemical Bank
 Chris C. Crenshaw Associates
 Chrysler Corporation
 Circuit City Stores
 Citicorp Savings
 Coastal Group, Inc.
 Combustion Engineering
 Compuserve, Inc.
 Consolidated Health Care, Inc.
 Consolidated Rail Corp. (Conrail)
 Continental Bank

Coopers & Lybrand
 Corning Glass Works
 Cresap McCormick & Paget
 Cryovac (Division of W. R. Grace)
 CSX Corporation
 D'Arcy Masius Benton & Bowles
 Data General
 Dean Witter Reynolds, Inc.
 Deloitte Haskins & Sells
 Donaldson, Lufkin & Jenrette
 Michael P. Doyle, Inc.
 Drackett Company
 Drexel Burnham Lambert, Inc.
 Eastman Kodak Company
 Eaton Corporation
 Electronic Data Systems Corp.
 Elizabeth Arden
 Emerson Electric Company
 Energy Management Association, Inc.
 Ernst & Whinney
 Ethyl Corporation
 Exxon
 Federal Bureau of Investigation
 Federal Express
 Federal Home Loan Bank Board
 First Boston Corporation
 First Commercial Brokers
 First National Bank of Maryland
 First Union National Bank
 First Wachovia Corporation
 Florida Power & Light
 Ford Motor Company
 FPL Group, Inc.
 Frito-Lay, Inc.
 FSLIC
 General Electric Company
 General Electric Credit Corporation
 General Foods
 General Mills, Inc.
 General Motors
 Goldman, Sachs & Company
 W. R. Grace & Company
 GTE Corporation
 Guardsmark, Inc.

H. J. Heinz Company
 Hallmark Cards
 Hanes Group
 Hanes Knitwear
 Harbridge House
 Harris Corporation
 Harris Government Systems
 Hewitt Associates
 Hewlett-Packard
 IBM Corporation
 Ingersoll-Rand
 Integon Corporation
 International Paper Company
 Irving Trust Company
 Jennings, Ryan, Federa & Co.
 Joseph E. Seagram & Sons, Inc.
 Kidder Peabody & Co., Inc.
 Kimberly Clark Corporation
 Kraft, Inc.
 L'Eggs Products, Inc.
 Leo Burnett Company
 Eli Lilly and Company
 Manufacturers Hanover Trust Co.
 Marine Midland Bank
 Mark Twain Bancshares, Inc.
 Maryland National Bank
 Massachusetts Mutual Life Insurance Company
 McDonnell Douglas Network Systems
 McKinsey & Company
 MCorp
 Mellon Bank
 Menasha Corporation
 Merck, Sharp & Dohme
 Merrill Lynch Capital Markets
 Metropolitan Life Insurance Company
 Michelin Tire Corporation
 Microsoft Corporation
 Milliken & Company
 Mobil Oil Corporation
 Moore Group, Inc.
 Morgan Guaranty Trust Company
 Morgan Stanley & Co., Inc.
 Motorola, Inc.
 Nabisco Brands, Inc.
 National City Corporation
 NCNB
 NCR Corporation
 Needham Harper Worldwide
 Northern Telecom, Inc.
 The Northern Trust Company
 Northwestern Mutual Life Insurance Company
 Paine Webber, Inc.
 Parke-Davis (Division of Warner Lambert)
 Peat, Marwick, Main & Company
 Pepsico, Inc.
 Personal Products Company
 Peterson, Howell & Heather
 Philadelphia National Bank
 Philip Morris, Inc.
 Pittsburgh National Bank
 Planning & Design Associates
 Planters Bank
 Price Waterhouse
 Procter & Gamble Company
 PruCapital, Inc.
 The Prudential Insurance Company of America
 Quaker Oats Company
 R. R. Donnelley & Sons Company
 Riggs National Bank
 RJR Nabisco, Inc.
 Roadway Express, Inc.
 Rochester Telephone
 Ryder System, Inc.
 Salomon Brothers
 Sami-Burke, Inc.
 Sara Lee Corporation
 Schering Plough
 Scientific Atlanta
 Scott & Associates
 Scott Paper Company
 Seaboard Systems Railroad
 Security Pacific National Bank
 Shearson Lehman Brothers, Inc.
 Siecor Corporation
 Smith, Barney, Harris & Upham Company, Inc.
 Snackmaster (Division of Mars)
 Sonoco Products Company
 Squibb Pharmaceutical Division
 SSC & B Advertising
 Standard Oil
 State Street Bank & Trust
 Target Stores
 Tenneco Oil
 Thomson McKinnon Securities
 TIAA-CREF
 Toronto Dominion Bank
 Touche Ross & Company
 Towers, Perrin, Forster & Crosby
 Trammel Crow Company
 The Travelers Insurance Companies
 TRW, Inc.
 Union Camp Corporation
 Unisys Corporation
 United Research Companies
 Vista Chemical Company
 Washington Gas Light
 Westinghouse Electric Corporation
 Westvaco
 Weyerhaeuser Company
 Xerox Corporation

Student Life



Living Accommodations

Most M.B.A. students live off campus in housing or apartments not owned by the University (see the section entitled Off-Campus Housing). However, Duke University has several residential facilities in which some single graduate and professional students live. On-campus married student housing is not available. Married students should refer to the section entitled Off-Campus Housing.

Town House Apartments. Town House Apartments, located about three blocks from the main East-West Campus bus line, is a thirty-two-unit complex, which houses single graduate and professional school students. These apartments are more spacious than most apartments found on campus or in Durham. Because of their location away from the academic facilities, students find that these apartments offer a change from normal campus life and activities. They are available for continuous occupancy throughout the calendar year.

Each air-conditioned apartment includes a living room, a master bedroom, a smaller bedroom, a bath and a half, and an all-electric kitchen with a dining area. Spacious closets and storage spaces are provided within each apartment. A swimming pool, located in the center of the complex, is open during the late spring and throughout the summer months.

Occupants must make arrangements with the local utility companies to pay for electricity, gas, and telephone service. These companies usually require a deposit when initial applications for service are made. Utility companies should be contacted prior to arrival as it usually takes several days to obtain service.

Central Campus Apartments. During 1975, Duke University completed a 500-unit apartment complex. Apartments are available throughout the calendar year for continuous occupancy to single students attending graduate and professional school.

Located in the center of the complex is a swimming pool (open during the late spring and throughout the summer months), a convenience store, and a pub.

All Central Campus Apartments are completely furnished by the University. An itemization of furnishings is included with the floor plans sent out in the application packet.

All utilities—water, heat, air-conditioning, and electricity—are provided. Telephones, which are provided in preinstalled locations in each apartment, are services through Duke University's Tel-Com telephone service. Central Campus Apartments' residents are responsible for having their phones connected.

Efficiency, two-bedroom, and three-bedroom apartments are rented to single students. Efficiency units are very limited in number and are generally not available to new students. Spaces in apartments for single students are provided on an individual basis

with each student paying rent per academic term to the University. This method permits students to share apartments with others of their choice. When this is impractical, the Department of Housing Management strives to place persons with similar interests together.

Modular Homes. Duke University owns six prefabricated modular homes which are located one block from the main East-West Campus bus line. Three of these three-bedroom homes are occupied by single graduate and professional students. The homes, completely furnished, provide more privacy than most apartments and are available to single graduate and professional students for continuous occupancy throughout the calendar year.

In addition to having three bedrooms, each home contains a full bath, an all electric kitchen, a dining area, and a living room. Sliding glass doors in the living room open onto a wooden deck. An outside storage area is provided in addition to spacious closets within the home. Except for the bathroom, kitchen, and dining area, the homes are completely carpeted and paneled.

Residents of the modular homes are responsible for making arrangements with local utility companies for gas, electricity, and telephone services.

Application Procedures. When students are informed of their acceptance to the business school they will also receive a postcard on which to indicate preference for University housing. This postcard should be returned to the Department of Housing Management. Detailed information on the types of accommodations and application forms will be forwarded to the accepted student. Assignment to all University housing is made on a first-apply, first-assigned basis and is not guaranteed.

Off-Campus Housing. The Department of Housing Management maintains a listing of rental apartments, rooms, and houses provided by property owners or real estate agencies in Durham. These listings are available in the department only; during the summer an assistant is available to answer questions and aid students in their attempts to obtain housing off-campus. Information on commercial complexes in the Durham area may be obtained by indicating a preference for off campus housing on the postcard which you receive with your acceptance packet. Except for assuring that owners sign a statement of nondiscrimination, off-campus property is in no way verified and neither the University nor its agents negotiate between owners and interested parties.

The search for accommodations should begin as soon as possible after acceptance to the business school. A visit of two or three days will allow the opportunity to make use of the off-campus service and to inspect personally the availabilities.

Food Services

Duke University Food Services (DUFS) operates a variety of dining facilities including "all you can eat" cafeterias, a la carte restaurants, fast food facilities, salad bars, elegant seated dining restaurants, and an on-campus pizza delivery service.

Graduate and professional students may choose to pay for food purchases in cash, or they may opt to open a prepaid account. There are two accounts which a student may open—a food only dining plan and a flexible spending account. The flexible spending account may be used to purchase any food items sold by DUFS, any items sold in the University stores, and to purchase beer and wine, where available.

For more information about opening either a flexible spending account or a dining account, contact the Auxiliary Services contract office at (919) 684-5800.

In addition to the above University food services, the Fuqua School of Business has its own cash-only snack bar, The Kiosk, which serves a limited menu of light snacks, sandwiches, and beverages during normal business hours.

Other Services

Bus Service. Free on-campus bus service is provided by the University connecting East, West, North, and Central Campuses, Science Drive and intermediate on-campus locations. Bus service is also provided between Duke Manor and Chapel Tower Apartments and the campus, during the academic year only. Printed schedules are available at the Bryan Center Information Desk, the Housing Management service offices, and from the transportation office located at 712 Wilkerson Avenue, just off East Campus behind Brightleaf Square. Schedules are also posted at each of the major bus stops.

Route, schedule, and employment information is available weekdays by calling 684-2218.

University Stores. University Store operations on campus sell textbooks, school supplies, health and beauty items, room accessories, gifts, clothes, and food items. Items may be purchased with cash, check, Visa or Mastercard, or on the Duke Card flexible spending account (see description under Food Services).

The Bryan University Center is the location of four of the stores' operations: the University Store sells school, office and computer supplies, and gift items with Duke University's official logos; the Duke University Bookstore sells textbooks, technical reference books, study aids, and computer software; the Gothic Bookshop stocks new fiction and nonfiction titles; and the Lobby Shop sells magazines, newspapers, health and beauty aids, and snack foods.

Student Activities

M.B.A. Student Association. The association serves as liaison between the students and faculty and administration in both academic and nonacademic matters. The structure of the association includes several standing and ad hoc committees dealing with concerns such as admissions and placement, computer and library facilities, intramural sports participation, alumni, and social events.

Cocurricular Activities. Graduate students at Duke University are welcome to use such University recreational facilities as swimming pools, tennis courts, and golf course, and to affiliate with the choral, dance, drama, music, and religious groups. Doctoral students may become junior members of the American Association of University Professors and may affiliate with Phi Beta Kappa and social fraternities.

A full program of cultural, recreational, and religious activities is presented by the Office of Cultural Affairs, the Duke University Parish Ministry, the Duke University Union, the Office of Student Activities, and recreational clubs. The Duke University Union sponsors a wide range of programs through its committees which are open to all segments of the campus community. Included are touring Broadway shows; rock, jazz, and pop concerts; speakers; films; a film-making program; the largest fully student-run television station in the country; art exhibits in two galleries; and a broad program in crafts located in Southgate Dormitory and the Bryan University Center.

The University Center complex includes the new Bryan University Center, which houses the Information Center, two drama theaters, a film theater, lounges, stores, meeting rooms, games room, rathskeller, art gallery, and other facilities; the West Union which includes dining facilities; and Flowers Building, which includes student publications, Page Auditorium, and the University box office.

Inquiries should be directed to the Intramural Office, 105A Card Gymnasium; the Office of Cultural Affairs, 107 Page Building; Duke Chapel; the Duke University Union, Bryan University Center; or the Office of Student Activities, Bryan University Center.

Full information regarding the scheduling of major events and programs for the entire year will be found in the Duke University *Annual Calendar*; detailed and updated information for the fall and spring semesters in the *Weekly Calendar*, available each Friday;

updated information for the summer session in the *Summer Session Calendar*, published at the beginning of each summer term; and the *Duke Chronicle*, published each Monday through Friday during the fall and spring and each Wednesday during the summer. Copies of the Duke University calendars may be obtained at the information desk, Flowers Building, or the calendar office, Page Building. Also during the summer, the *Summer Session Newsletter* is published weekly by the summer session office and is available at convenient locations.

Intramural and Recreational Sports. The Duke recreational and intramural programs provide all students with opportunities to participate in some form of healthful, informal, and competitive physical activity. In a typical year, more than 3,000 students compete for many intramural titles and trophies. Each year Duke, the University of North Carolina, North Carolina State, and Wake Forest meet in the annual Big Four Intramural Day.

The men's and women's intramural programs include many different activities (e.g., bowling, cross-country, golf, handball, horseshoes, table tennis, volleyball, soccer, softball, and track). In addition, special events in other areas of interest are held. Various performing clubs, including one for water ballet, offer the student opportunities to take part in extracurricular activities. Through coeducational intramurals, the student is encouraged to participate on a less competitive level, promoting relaxed social and physical activity. Opportunities for competition between men and women are provided in areas that include archery, badminton, basketball, softball, racquetball, squash, table tennis, tennis, volleyball, and water polo.

The University's varied athletic and recreational facilities and equipment are available for use by students. The facilities for recreation include a golf course, lighted tennis courts, three swimming pools, squash and racquetball courts, three gymnasiums, a weight training room, outdoor handball and basketball courts, an archery range, horseshoe courts, an all-weather track, numerous playing fields, jogging and exercise tracks, and informal recreational areas. More than thirty sports clubs dealing with gymnastics, scuba diving, sailing, cycling, crew, riding, fencing, football, frisbee, ice hockey, kayaking, lacrosse, badminton, karate, rugby, soccer, and other activities are available to interested students.

Graduate and Professional Student Council. The Graduate and Professional Student Council is the representative body for the students of graduate departments and professional schools. The council provides a means of communication between schools and between graduate students and the administration. The council selects graduate students for membership on University committees. Representatives of each department and officers of the council are selected annually.

Religious Life. The Duke Chapel is open daily for prayer and meditation. The Sunday morning worship in the Chapel at 10:55 A.M. is the central focus for University religious life. The Chapel Choir is open to those who wish to sing in it. The Benjamin N. Duke Memorial Organ is played Monday through Friday from 12:30 P.M. to 1:30 P.M. Special guest recitals are also scheduled. The ministers and other members of the Chapel and Religious Life staffs are available to provide counseling help and other assistance as needs arise.

Health Care

Medical Care. The aim of the Student Health Service is to provide any medical care and health advice necessary to the student as a member of the University community. The health service maintains the Student Health Services Clinic located in the Pickens Building on West Campus and the University Infirmary on the East Campus. Emergency transportation can be obtained by the Duke campus police. A separate fee for the Student Health Service is assessed.

The Student Health Service offers varied benefits. To secure them, full-time graduate students must be in residence; during the fall and spring semesters, they must be registered for at least 9 units per semester until they have passed the doctoral preliminary examination, after which they must be registered for at least 3 units in residence. During the summer, graduate students must be registered for at least 1 unit of research or 3 units of course work. The student health fee is nonrefundable after the first day of classes in the semester.

The Student Health Services Clinic offers the student outpatient services, routine laboratory and X-ray examinations in the clinic for the treatment of acute illness or injury, and advice and assistance in arranging consultation for medical treatments. Fees for such consultations or treatments must be paid by a student who is not covered by an insurance plan.

The facilities of the University Infirmary are available to all currently enrolled full-time students in residence during the fall and spring. Hospitalization in the University Infirmary is provided for treatment of acute illness or injury as authorized by the Student Health Services Clinic physician. Students are required to pay for their meals while confined to the infirmary.

The resources of the Duke University Medical Center are available to all Duke students and their spouses and children. Any bills incurred at Duke Hospital or any other hospital are the responsibility of the student, if not covered by an insurance plan. The Student Health Program does not provide health care for spouses and dependent children of married students. Coverage of the married student's family is provided in the University's Student Accident and Sickness Insurance Plan for an additional fee. Refer to the chapter, "Financial Information," for complete information on this plan.

Counseling and Psychological Services. CAPS provides a comprehensive range of counseling and psychological services to assist and promote the personal growth and development of Duke students. The professional staff is composed of clinical social workers, psychologists, and psychiatrists experienced in working with young adults. Among services provided are personal, social, academic, and career counseling. A number of short-term seminars or groups focusing on skills development and special interests such as coping with stress and tension, fostering assertiveness, enriching couples' communication, and dealing with separation and divorce are also offered. A policy of strict confidentiality is maintained concerning information about each student's contact with the CAPS staff. Individual evaluation and brief counseling/therapy as well as career and skills development seminars are covered by student health fees. There are no additional charges to the students for these services. Appointments may be made by calling 684-5100 or visiting CAPS, 214 Old Chemistry Building.

Academic Procedures and Information



Registration

All students enrolled in the Fuqua School of Business must register each semester until all degree requirements are completed. After receiving notification of admission to the school and returning a statement of acceptance of admission, the student must register for the term indicated in the admission letter. New matriculants register during orientation week at the designated times. Each student must complete a course card listing the course work to be taken during the semester. In the case of independent studies, courses outside the school and overloads, it will be necessary to obtain the permission of the program director. The student then presents this course card to registration officials for enrollment in the selected courses. After the first registration, a student must register for subsequent semesters at the regular stated time for registration. Currently enrolled students who fail to register at the first scheduled registration period for the subsequent semester incur a penalty for late registration.

Late Registration. All students are expected to register at the times specified by the University. A late registration fee of \$25 is charged any student registering late.

Change of Registration. During the first *week* of the semester, registration may be changed with approval.

Academic Requirements for the M.B.A. Program

Grading. The grading scale for M.B.A. students is: Superior Pass (*SP*)—4.0; High Pass (*HP*)—3.5; Pass (*P*)—3.0; Low Pass (*LP*)—2.5; and Fail (*F*).

Continuation Requirements. An M.B.A. student is expected to complete all courses approved by the Program Director for a given semester and attain a GPA of 3.0 to proceed to the next semester of the program.

Any student who receives a grade of fail (*F*), or a grade point average of less than 3.0 after any term, will be subject to academic performance review. The student's academic standing is determined during the performance review by the respective Program Director and the faculty of the Curriculum Committee. Any mitigating circumstances that may have inhibited a student from making satisfactory progress will be heard and evaluated at that time.

In order to be certified as making satisfactory progress toward the degree, a student enrolled in the M.B.A. program must:

1. Complete all courses approved by the Program Director for a given semester and attain a GPA of 3.0 or: have been reviewed by the Program Director and faculty of the Curriculum Committee, where it must be determined that mitigating circumstances did inhibit the student from meeting all course requirements or attaining a 3.0 GPA. Under these circumstances the student will be allowed to continue the program with a GPA below 3.0 and still be considered as making satisfactory progress toward the degree.
2. Complete the program according to the following schedule: a minimum of 33 credits in the first academic year of the program, and 63 credits by the end of the second academic year of the program.

For students enrolled in the Executive M.B.A. Evening Program, they must complete a minimum of 10 units by the end of the first calendar year, 34 units by the end of the second calendar year, and 50 units by the fall of the third calendar year.

For students enrolled in the Executive M.B.A. Weekend Program, they must complete a minimum of 27 units by the end of the first calendar year and 45 units by the fall of the second calendar year.

Students on official leaves of absence from any program will be exempted from these requirements for the duration of that leave.

Graduation Requirements. An M.B.A. student who has successfully completed all program requirements and has earned a grade point average of at least 3.0 will be graduated.

Exemptions. It is possible to obtain an exemption from any of the first year required courses. This may happen in one of two ways. The first way is by passing an exemption exam in the subject matter of that course. The second way is administrative, that is, transcripts of entering students are reviewed prior to their arrival and exemptions are offered in areas where prior satisfactory course work is documented. This second method of exemption is applicable only to daytime M.B.A. students.

Standards of Conduct. Duke University expects and will require of all its students' cooperation in developing and maintaining high standards of scholarship and conduct. The University wishes to emphasize its policy that all students are subject to the rules and regulations of the University currently in effect or which are put into effect from time to time by the appropriate authorities of the University.

Any student in accepting admission indicates a willingness to subscribe to, and be governed by, these rules and regulations and acknowledges the right of the University to take such disciplinary action, including suspension and/or expulsion, as may be deemed appropriate, for failure to abide by such rules and regulations or for conduct adjudged unsatisfactory or detrimental to the University.

The Fuqua School of Business has established its own Honor Code which is overseen by a Judicial Board comprised of three faculty and three student members. The Honor Code governs conduct and the integrity of student scholarship.

Commencement

Graduation exercises are held once a year in May. At this time degrees are conferred and diplomas are issued to those who have completed requirements by the end of the spring semester.

Those who complete degree requirements at the end of the fall semester or by the end of a summer term receive diplomas dated December 30 or September 1, respectively. There is a delay of about one month in the mailing of September and December diplomas because diplomas cannot be issued until they are approved by the Academic Council and the Board of Trustees. A special conferring of degrees for executive M.B.A. students is held each year in October.

Other Information

Student Records. Duke University adheres to a policy permitting students access to their student records, with the exception of confidential letters of recommendation received prior to January 1, 1975, and certain confidential financial information. Students may request review of any information which is contained in their student records and may challenge the content of their records by appropriate procedures. An explanation of the complete policy on student records may be obtained from the Associate Registrar.

No information contained in student records (academic or otherwise) is released to persons outside the University or to unauthorized persons on the campus, without the consent of the student. A student grants consent by signing a form which authorizes the release of data. Specific consent is required for the release of information to any person or organization outside the University, and it is the responsibility of the student to provide the necessary authorization and consent. Official transcripts may be sent by the University Registrar at the signed request of the student and upon receipt of a \$1 processing fee.

Reciprocal Agreements with Neighboring Universities. Under a plan of cooperation between Duke University and the University of North Carolina at Chapel Hill, the University of North Carolina at Greensboro, North Carolina Central University in Durham, and North Carolina State University at Raleigh, students properly enrolled in the Fuqua School of Business during the regular academic year, and paying full fees to this institution, may be admitted to a maximum of two courses per semester and four courses total at one of the other institutions in the cooperative plan. Under the same arrangements, students in the graduate schools in the neighboring institutions may be admitted to course work at Duke University. All interinstitutional registrations involving extra-fee courses or special fees required of all students will be made at the expense of the student and will not be considered a part of the Duke University tuition coverage.

Identification Cards. Graduate students are issued Duke University identification cards which they should carry at all times. Students must validate the card each semester by obtaining a semester enrollment sticker from the Registrar. The cards are the means of identification for library privileges, athletic events, and other University functions or services open to them as University students. Students will be expected to present their cards on request to any University official or employee. The cards are not transferable, and fraudulent use may result in loss of student privileges or suspension. A student should report the loss of a card immediately to the Registrar's office. The cost of a new identification card is \$5.

Courses of Instruction



Master of Business Administration

CORE COURSES—300 SERIES

These courses are required to be taken in the first year except for Business Policy and the Management Experience (BA 340) and one course in the environmental field (one of BA 342, BA 343, or BA 345), which are typically taken in the second year. Students passing exemption exams may substitute electives in their first year. Unless specified otherwise, each course is worth three units of credit.

300. Managerial Economics. Considers how the actions of business firms, consumers and the government—operating within a price system in a decentralized market economy—answer such basic resource allocation questions as what will be produced how it will be produced, who will consume what is produced, and what resources to divert from present consumption to increase future consumption. The impact of various types of market structures (such as perfect competition, monopoly, and oligopoly) on economic efficiency will be discussed. Provides the student with an ability to view resource allocation problems within a constrained optimization framework and with some practice in applying marginal analysis.

301. Economic Environment of the Firm. Develops the theoretical framework within which the determinants of economic aggregates such as gross national product, the rate of unemployment, and changes in price levels can be analyzed. The emphasis of the course is to provide the manager with the knowledge necessary for making and understanding forecasts of the macroeconomic environment. Both Keynesian and monetarist approaches are considered.

303. Microeconomics for Managers. Provides an alternative to BA 300 for those students with intermediate or advanced backgrounds in mathematics. Both courses address the same topics. They develop the students' ability to apply economics to understanding the market environment in which managerial decisions are made and provide a structure for the managerial decision-making process. Prerequisites: intermediate or advanced knowledge of business mathematics.

311. Statistical Analysis for Management. Examines structures for managerial decision making under conditions of partial information and uncertainty. After developing a foundation in probability theory, the course extends this foundation to a set of structures and methodologies for the analysis of decision problems. Included are topics in probability, classical inference, and multivariate analysis.

312. Quantitative Analysis for Management. Examines the principles and techniques of building quantitative models to aid managerial decision making. Special emphasis is placed on utilizing models for structuring and analyzing resource allocation problems and decision problems under uncertainty. Topics include linear programming, decision analysis, and simulation.

318. Computer Laboratory. Introduces the student to the personal computer as an aid to executive decision-making. The course covers the operation of the personal computer, and the use of software including electronic spread sheets, statistical analysis, and word processing. 1 unit.

320. Organization Behavior. Provides a study of organizations and their environment and the social and psychological foundations necessary to understand the behavior of individuals within organized settings. Emphasis is given to managerial strategies which enhance organizational effectiveness. Topics include individual and small group behavior, goal setting and adaptation, organization structure, and leadership.

330. Financial Accounting. Introduces the student to the types of information requirements imposed on the firm by agencies in its environment and develops an understanding of the activities of the firm within the framework of a financial accounting system designed to satisfy these information requirements. Emphasis is given to the study of financial accounting, reporting, and measurement problems from a theoretical and an applied basis, using cases and topical problems in financial accounting as a foundation for the learning experience.

331. Managerial Accounting. Focuses primarily on managers who are users rather than preparers of accounting information. Examines the use of accounting information in its major functions of planning, control, and product costing. Specific topics include cost estimation, budgeting, standard costing, control and performance evaluation, cost allocation, information systems, data limitations, and rational decision making using accounting information.

340. Business Policy and the Management Experience. Enables the student to apply the skills obtained in earlier courses to managing a business enterprise. The first portion of the course deals with issues like competitive analysis. In the course's second portion, student teams are responsible for the management of firms in a computerized simulation which has the characteristics of a large, consumer-oriented industry. Emphasis is placed on developing an overall corporate strategic plan, implementing the strategy, and communicating the plan and results to boards of directors. Decisions must be made concerning the fundamental areas of operations, marketing, finance, and human resource management. These decisions are made in light of the strategic objectives set forth in the plan. Each firm makes several formal oral and written presentations to its board of directors which is composed of faculty and executives from the local business community. The use of personal computers for analysis and report preparation is encouraged.

342. Social, Legal, and Political Environment of the Firm. Examines the social, legal and political environment within which the business firm exists and must function. Issues of ethics, values and corporate culture are probably the least studied subjects in the formal training of entrepreneurs and executives. Class discussions explore issues raised by society's expectations of the corporation as well as corporate responses to these expectations. The course is organized around films, case discussions, guest speakers and

lecture discussions. Recent topics have involved business ethics, public perception of business, business-media relationships, product safety and liability, corporate philanthropy and volunteerism, employment at will, the regulatory climate of business, political action committees and the ethics of advertising.

343. Managing the Regulatory Process. Provides the student with an ability to understand and manage private sector problems and opportunities created by government programs. By examining the processes used by the legislative, executive, and judicial branches to create, implement, and enforce laws and regulations, the prospective manager will be prepared to compete effectively in markets controlled or affected by government activities. The course will consider the management problems created by the United States antitrust laws and various government agencies regulating environmental hazards, energy, and health and safety.

345. Legal Environment of the Firm. Considers the legal environment of the firm with emphasis on the legal system, the process by which laws are formulated and changed, and the type and forms of legal constraints imposed on firms. Also examined are major legislation, court cases, and regulation by federal agencies which affect the firm's decisions. Prerequisite: second-year standing in the M.B.A. program or consent of the instructor.

350. Financial Management. Provides an overview of corporate finance, financial markets, portfolio diversification and asset pricing. Since firms must understand financial instruments and how the market views them before making decisions about which ones to use, fundamental issues and models of risk, return and asset pricing are presented. Exercises and cases require students to project short-term and long-term financial needs, value bonds and stocks, and critique capital budgeting techniques. Futures and options markets are introduced and students briefly manage portfolios of those contracts. Major corporate finance issues of debt and dividend policies are examined.

360. Marketing Management. Provides an overview of the marketing function in business firms by acquainting students with the fundamental issues and decisions involved in planning and managing marketing activities. Attention is given to the strategic marketing decisions of new product development, product policy, pricing, advertising and communications, marketing research, personal selling, and channels of distribution. Major emphasis is placed on developing an understanding of the underlying forces which influence marketing decisions, including buyer behavior, competitive marketing activity, organizational considerations, and governmental regulation.

370. Operations Management. Surveys issues in the design, operation, and control of the process by which goods are manufactured and services delivered. Specific topics of study include the analysis of different kinds of production processes, managing the workforce, planning production and managing materials, managing quality, choosing new capacity, dealing with technological advance, dealing with vertical integration, and combining operations choices into a coherent strategy.

388. Business Communication. Constitutes a program in oral and written communication. It helps students develop the abilities to organize clearly and present effectively both written and oral reports. Oral practice is accomplished in the fall term, while written practice is a spring term endeavor. 2 units.

ELECTIVE COURSES—400 SERIES

These courses are typically taken by students with second-year standing but may be taken earlier with permission of the instructor. These courses are generally offered each year, but there may be additions or deletions in response to student and faculty interest. Unless specified otherwise, each course is worth three units of credit.

410. Operations Research Applications. Deals with problems of organization for an operations research project, formulation of the problem, model construction, interpretation of analytical results, and implementation. Selected cases of particular applications of operations research from the literature serve as a basis for much of the class work. Students work in local industry, the University, the Medical Center, or in other cooperating agencies on operations research problems. Methodologically, some attention is devoted to advanced solution techniques as necessary to complete student projects, but primary attention is focused on formulation and use of models, the modification of existing models, or the development of new ones.

411. Operations Research Methods. Surveys the methodologies of operations research and shows how they can be applied to decision-making situations. The course will be primarily concerned with selecting which tool to use in various situations, rather than algorithm details. Topics to be covered include dynamic programming, stochastic programming, integer programming, nonlinear programming, Markov chains, inventory theory, and linear model formulation.

412. Statistical Forecasting. Increased access to computer data bases and modeling tools presents the modern manager with opportunities and challenges to use statistical data analysis in forecasting, planning, and decision-making. This course will cover the use of major statistical forecasting techniques, including multiple-regression and time-series models, that are applicable in many functional areas of business. It will emphasize hands-on computing with a microcomputer statistics package.

421. Power and Politics in Organizations. Examines the interplay of power and politics in organizational settings with particular emphasis on the use of influence strategies in managerial decision making. Specific topics to be included are understanding the role of power in organizations, its sources and conditions for use, political strategies and tactics and specific organizational issues such as resource allocation, career politics, organizational change and retrenchment. Relevant research and theory will be examined but students will be encouraged to make practical application in decision-making situations through case analyses and discussion, and the development of personal skills in the politics of management. Prerequisite: Second year standing in the M.B.A. program or consent of instructor.

422. Dynamics of Bargaining. Explores the processes of bargaining and negotiation; the dynamics of interpersonal and intergroup conflict; and understanding of theory and research related to processes of influence, negotiation, and conflict management. A second part will emphasize skill development through extensive case analysis, role playing, and simulation.

423. Human Resource Management. Provides an integrative and comprehensive understanding of issues and challenges involved in the management of human resources in contemporary, complex organizations. The topics discussed include employee selection and placement, training and development, compensation and reward systems, performance evaluation, career development, human resource planning, international human resource management, and the contribution of human resource management to overall organizational effectiveness. The cultural and legal contexts of human resource practices are also addressed. Perspectives for this course are from the line or operating managers primarily. The roles of the personnel department and the personnel specialists are evaluated in terms of their contribution to the human resource function within the operations of the line manager.

424. Managerial Effectiveness. Explores what is known about effective management and leadership in organizations, and helps prospective managers identify and improve their own leadership skills. To achieve these purposes the course will alternate between a review of past research on organizational leadership and practical skill development.

Readings and class discussion will provide exposure to various models of effective managerial behavior. In addition, much of the class time will be structured so that students will have an opportunity to experiment with, observe, and practice the skills being considered. Some of the topics reviewed include leadership style, organizational politics, interviewing, setting objectives and appraising performance, planning and time management, improving group effectiveness, and conflict management. Prerequisite: second-year standing in the M.B.A. program or consent of instructor.

425. Managerial Decision Making. Focuses on helping managers to understand and improve decision making. The primary objective is the development of skills in the use of computer-based decision aids that exploit the intellectual strengths of humans while overcoming their cognitive limitations. Of particular interest will be the techniques of risk and decision analysis. Case discussions, experiential exercises, as well as lectures, will be used to help develop an appreciation of the potentials of various decision aids. Prerequisite: second-year standing in the M.B.A. program or consent of instructor.

426. Organizing Business Activities. Organizing individuals' activities and decisions to perform tasks, solve problems, and achieve goals in business. Choices on the patterns and relations in people's activities and decisions that coordinate and control people to produce desired ends are studied. Different kinds of organizing decision problems and their relations to one another are identified and analyzed. The efficiency and effectiveness of the part or the whole of the organization that results from these decisions are analyzed for different environments. Organizing problems of divisionalized, matrix, functional, and other organizations are investigated. Organizing problems of departments, project teams, sections, and smaller units are also studied. The object is to understand the nature of the problems of organizing so that the solutions that emerge match the part or the whole of the organization to its goals, and to make both these fit the internal and external environments. The work includes readings, cases, and examinations of actual contemporary organizing problems and decisions. This course is intended for the student who is interested in getting it together, making it happen, writing the play-book, and staying with it. Prerequisite: second-year standing in the M.B.A. program or consent of instructor.

427. Industrial Relations. Introduces students to the concept of an industrial relations system and the constraints that the choice of such a system places on a manager. The course begins with an in-depth analysis of the traditional North American unionized system, moves through the means by which this system is presently evolving, and concludes with a survey of some alternative systems. This course uses a union model as a means of introducing issues relevant to all industrial relations systems.

428. Managing Change and Innovation. Managing innovation, new technology, new product development, and research in the changing enterprise. Topics include the management of project selection, project implementation, manpower and resource allocation among competing activities, budgeting, productivity measurement and enhancement, conflict and coordination among organizational subunits, adaptive organizational subunits, adaptive organizational forms, devising incentives and reward schemes for engendering new ideas, and risk taking. The course will use a combination of readings, lecture/discussions, cases, and guest lectures by managers. Students are encouraged to do field studies. Prerequisite: second-year standing in the M.B.A. program or consent of instructor.

429. Managing Information in Organizations. Examines the way individuals use information to manage organizations. Modern organizations are organized by their effectiveness in the creation and use of information. Information is gathered, stored and transmitted in order to make decisions, implement decisions, control organizations, motivate and reward individuals. Information is analyzed from power and cultural perspectives. Computer-based information is a part of the total information system. The best

mix of computer and noncomputer information is analyzed from technical and behavioral perspectives. Examples are drawn from accounting, finance, marketing, and human resource management as well as policy issues. The class mixes lecture/discussion and case studies and/or field studies.

430. Financial Accounting Standards and Analysis I. Examines problems of asset and liability valuation and the related issues of income determination from the perspective of the professional accountant. The information needs of financial statement users are emphasized. Frequent reference is made to professional accounting pronouncements. Prerequisite: M.B.A. standing, one course in financial accounting, and one course in managerial accounting.

431. Financial Accounting Standards and Analysis II. Examines advanced topics in financial accounting from the perspective of the professional accountant. Specific attention is devoted to the accounting and reporting problems of complex corporate enterprises. Topics include consolidated financial statements, partnerships, and not-for-profit accounting. Prerequisite: BA 430.

433. Management Planning and Control. The aim in this course is more effectively to use information in management, through, for example, statistical models for forecasting, probability models for control, and management science models for planning. The course also explores, from a more qualitative perspective, broad issues of control and performance evaluation in service industries, not-for-profit organizations, and multinational operations.

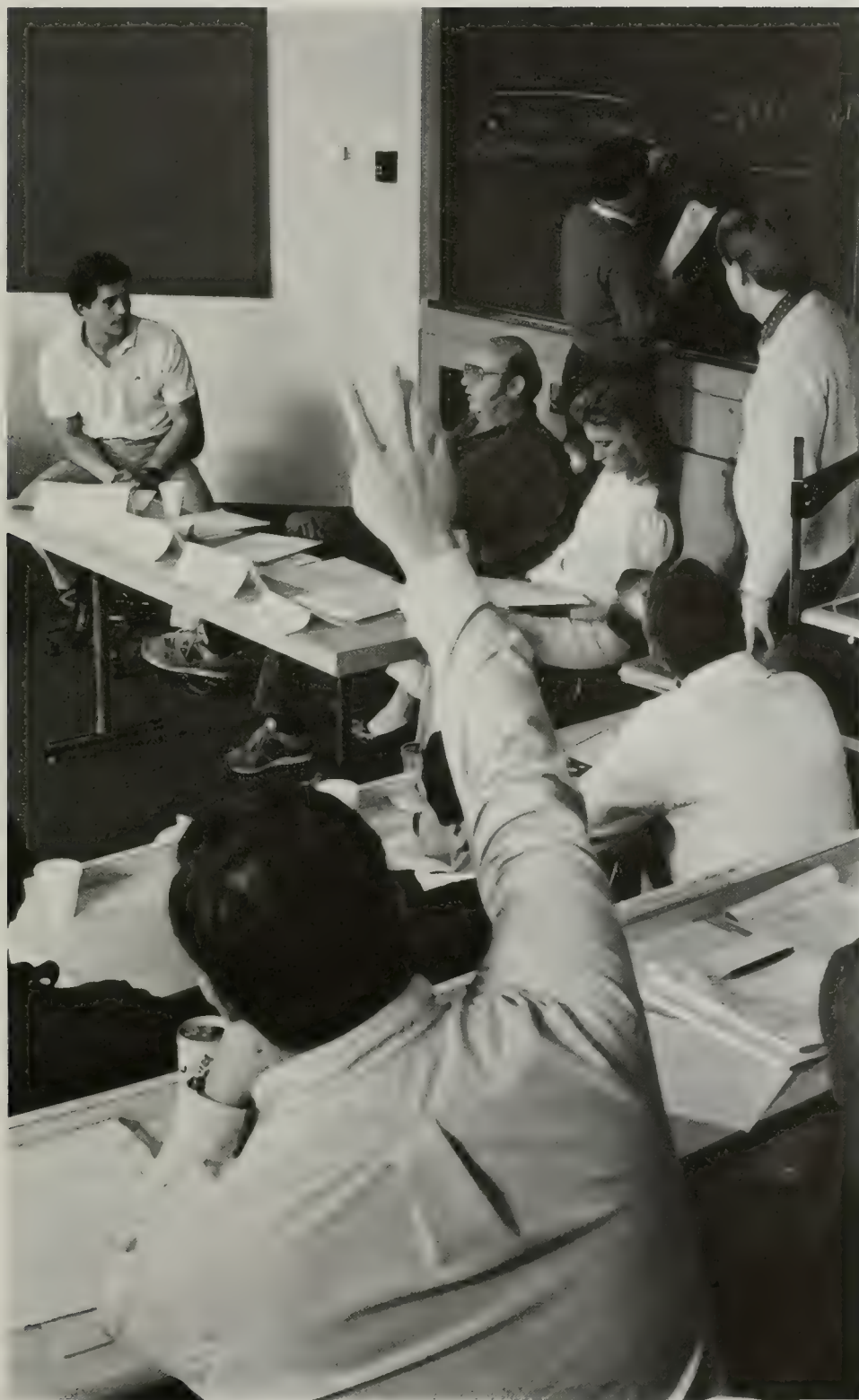
434. Corporate Financial Reporting. Focuses on significant issues of interest to users of publicly available accounting information, including financial statements. Issues of current interest in the valuation of assets and liabilities and income determination are considered. Emphasis is placed on the effects of alternative accounting measurement and reporting procedures on users' decision models.

435. Management Information and Control Systems. Examines the role of the Accounting Information System (AIS) in supporting the management control system and the strategic planning process within the organization. Specific attention is given to the problems of design and operation of the AIS, the role of information in planning and control, technologies of information systems, dynamics of information flows and the problem of fraud in the computer-based AIS.

436. Internal Control, Auditing, and Information Systems Analysis. Studies the techniques available to evaluate the reliability of an existing information techniques available to system. An evaluation is made of information flows, aggregation techniques and other topics necessary to evaluate the credibility of information reported from a particular data gathering system. Topics include audit objectives from an internal and external standpoint, cost of information, standards, and other topics relevant to both internal and external auditing problems.

437. Financial Statement Analysis. Explores the use of financial statement information within the context of modern finance and accounting research. Empirical studies are introduced to demonstrate how financial statement data interface with nonaccounting data such as stock prices, industry factors, and macroeconomic variables. Major topics include the statistical properties of accounting numbers in time series and cross-sectional analyses, the role of financial statement information in efficient capital markets and in portfolio decisions, and the association between accounting numbers and security returns. The course also examines financial information used in credit granting decisions and in predicting bond ratings and bankruptcy.

440. Corporate Strategy and Public Policy. Examines the major phases of the strategic planning process in business firms and the manner in which business firms can



affect public policy. Considerations involving the various functional areas of management are synthesized to permit executives to make meaningful decisions concerning the product-market posture of the firm. Examples of the topics covered include formulation of goals, analysis of the external environment, bottom-up and top-down planning, coordination and control, management objectives and responsibilities, and the role of business firms in influencing public policy.

442. Entrepreneurship and New Venture Management. Provides an intensive, tutored field study of the formation of new business ventures. Students work in teams to develop market, strategic, operations, and financial aspects of original ideas toward completion of a full business plan. Entrepreneurs and new venture investors advise students on the progress of their work and evaluate final plans.

445. Business Planning. Presents corporate, security, and tax issues for analysis and resolution through examining a series of problems involving common business transactions. The problems will include such topics as the formation of closely-held and public corporations, stock redemption, the sale of a business, merger and other types of combination transactions, and recapitalization, division, and dissolution of corporations.

446. Federal Income Taxation. Deals with the basic concepts of federal income taxation with emphasis on gross income inclusions and exclusions, deductions, credits, and computations of gain, loss, and basis upon dispositions of property.

450. Short-Run Financial Management. Examines the financial management and control of a firm's short-term assets and liabilities. Topics include cash management, collection and disbursement techniques, management of the firm's short-term investment/borrowing portfolio, cash forecasting, receivables management, and the management of the firm's bank relationships.

451. Advanced Corporate Finance. Examines in depth the major financial decisions faced by the firm. Topics include dividend policy and capital structure decisions of the firm, as well as the pricing of various financial instruments. While the major emphasis of the course is on the traditional and recent theories regarding corporate financial decision-making, much time is devoted to the consideration of empirical evidence supporting/refuting the various theoretical propositions. Time permitting, some special topics such as mergers and acquisitions and lease financing will be considered.

452. Money and Capital Markets. Considers the structure and behavior of capital markets. The course includes a discussion of the institutional framework of the American capital market as well as the major international markets, although the emphasis is on the theoretical foundation for analyzing interest rates and funds flow in those financial markets. Included among the topics is an extended discussion of monetary theory, the term structure of interest rates, and the analysis of risk in financial markets.

453. Investment Management. Focuses on the fundamentals of security valuation and portfolio selection in an informationally efficient and efficiently-functioning capital market. Topics covered include the structure and operation of securities markets, external and internal market efficiency, portfolio theory, risk and return in asset pricing, the role of arbitrage, and the measurement of portfolio performance, with emphasis being placed on the application of financial theory. The types of security markets discussed include stocks, bonds, financial futures and options. Both theory and empirical evidence are considered. Students are required to carry out homework exercises involving the use of microcomputer software.

454. Management of Financial Institutions. Develops a framework for understanding financial intermediation and its role of providing the conduit for the flow of funds through the economy. Considers the sources and uses of funds in the economy and how commercial banks and other financial institutions act as agent on behalf of both savers and

users of funds. Examines the structure and operations of the Federal Reserve System and its effect on commercial banks.

455. Futures and Options Markets. Focuses on the use of futures and option contracts in the financial management of corporations and the management of security portfolios. In the futures area emphasis is placed on interest rate futures, currency futures, and stock index futures. General pricing of agricultural futures is also studied as well as the use of agricultural and other contracts in diversifying security portfolios. In the options area emphasis is placed on the use of stock options in the financial management of stock portfolios. Interest rate options and the use of option pricing models in the formulation of optimal option investment strategies are also studied.

456. Corporate Finance. Provides a conceptual framework for corporate financial decision-making. Under the assumption that corporate financial manager's act so as to maximize shareholder wealth, the course focuses on the two major types of decisions faced by the financial manager—what assets to acquire and how to finance the acquisition for those assets. Major topics thus include capital budgeting under uncertainty, the capital structure and dividend policy decisions of the firm, and short-term asset and liability management. Careful consideration is given to the risk-return tradeoff involved in the decision-making process. Course concepts are applied through analysis and presentation of case materials.

457. Entrepreneurial Finance: The Investment Decisions. Certain investment decisions undertaken by a business organization, big or small, may be regarded as being truly entrepreneurial in the sense that the decisions have significant strategic implications, and that relevant information may be fragmentary, incomplete, or very uncertain. To illustrate such risky investment decisions, one might consider a proposal to change production technology, a proposal to enter a new market environment, or a proposal to locate facilities abroad. Such decisions tend to require significant resource commitments where the management of risk is critical to the success of a venture. Approximately the first half of this course will be conceptual in nature with the objective of designing an analytical framework for use in decision making. The second half of the course will be applications oriented with a series of case studies being used to explore this area of management activity.

458. The Microstructure of Securities Markets. Examines the operations of the markets for securities, emphasizing common stocks. Primary attention is given to the structural characteristics of a trading system, the market-making function of specialists and other dealers, the determinants of a stock's trading characteristics (bid-ask spread, price volatility, and correlation patterns in returns), and the development of a National Market System. Major considerations in the design of trading systems that will be considered include competition in market making, integration of the marketplace, continuous markets versus periodic calls, automation of the trading process, stabilization of price movements, and regulation of securities markets.

459. Investment Banking. Develops a fundamental understanding of the many roles of investment banking firms in the capital marketplace. As financial intermediaries, investment banks originate, underwrite, and distribute new security issues, serving both their issuing clients and their investing customers. Investment bank services may also include advising clients, arranging lease financing, arbitraging profit opportunities, placing unregistered securities, and providing broker and dealer services. Topics include markets and market making, and syndication and underwriting. Corporate finance decisions pertaining to investment banks (e.g., mergers and tender offers) are also considered.

460. Advanced Marketing Strategy. Considers in greater depth the process of strategic planning in the marketing function and its relation to corporate strategy. Offers an opportunity to sharpen and extend analytical skills in marketing as well as to synthe-

size understanding of the managerial, organizational, and environmental aspects of marketing activity.

461. Marketing Research. Considers the process of identifying and generating information from research as input to marketing decision making. Emphasis given to the perspective of the marketing manager in determining whether additional information is needed and, if so, how appropriate information should be acquired. Topics include problem definition, research budgeting, research designs (survey, observational, experimental), sampling, methods of data collection, data analysis, and interpretation.

462. Consumer and Buyer Behavior. Provides an opportunity for advanced study of the behavior of buyers of consumer and industrial goods/services. Objectives include (1) increasing the prospective manager's sensitivity to and understanding of buyers and the psychological, sociological, and anthropological forces which shape their behavior, and (2) enabling the student to apply this knowledge in arriving at improved marketing decisions.

463. Advertising Management. Deals with issues and problems in planning and controlling advertising activities in the firm, largely from the perspective of product managers and general marketing managers who must develop strategies for communicating with customers and other important publics of the firm. Attention is devoted to the setting of advertising objectives, budget appropriation, copy/message strategy, media strategy, advertising research and evaluation, and government regulation. Emphasis is placed upon behavioral analysis of target audience utilizing social-psychological and communication theories.

464. Product Management. Develops further insights into the process and policies which guide the firm's offering of products to the market place. Topics include the problem of merging market needs with corporate resources; product concept and positioning; systematic approaches to new product development; branding; packaging; product abandonment. The basic point of view is strategic in that product decisions are an integral part of overall marketing strategy decisions. Interfunctional management aspects are also considered.

465. Industrial Marketing. Provides students with the conceptual foundations and analytic techniques used in marketing products and services to businesses. Marketing issues are approached through complementary industry and firm analyses. An industry analysis characterizes the economic forces driving relationships among competitors, suppliers, and customers. Within the context of the industry, the appropriate strategy for the firm is determined. In addition to cases and readings, students are expected to complete one industry analysis using largely library sources. Following the industry analysis they are expected to write a strategic analysis of one firm within that industry.

466. Channel and Distribution System Management. Subjects of study are the formulation and solution of problems involving strategies and decisions on the firm's relations with other elements that make up its different market environments. Decision problems on the choice of forms and levels of cooperation and competition with other organizations are analyzed. The efficiency of different forms and structures of marketing channels and distribution systems is discussed and determined. Specific problems studied include: decisions on the allocation of marketing activities and resources to different levels and operations in the channel; the coordination of these activities and levels; the coordination and control of advertising, selling efforts, prices, etc. of sellers and resellers, and the various decisions on transaction components such as delivery time, credit terms, advertising allowances, managerial help, exclusive distribution and others. Lectures, discussions and cases.

470. Operations Planning and Control. Examines detailed tactical problems facing operating managers. The emphasis is on specific planning and control problems and

on techniques for solving them. Topics include materials planning and inventory control, aggregate and detailed scheduling, and manufacturing software packages.

471. Manufacturing Strategy. Investigates the strategic operating policy options available to manufacturing companies, with the goal of learning why some companies' manufacturing operations are a greater competitive threat than others. The concept of factory focus will be examined in detail and aspects of the Japanese philosophy of manufacturing will be explored. The remainder of the course will take three different, and distinct, approaches to strategic issues. The first is an "industry" approach where different manufacturing strategies prevailing within a particular industry will be examined. The second is a "decision" approach where company handling of a specific type of decision (e.g., new capacity, vertical integration, process modernization) will be contrasted across industries. The third is an "external environment" approach where the impact on manufacturing of a particular external force (e.g., regulation, energy price inflation), will be assessed.

472. Operations Management in the Service Sector. Examines the strategic and tactical problems associated with the management of diverse service systems such as hospitals, banks, transportation companies, restaurants, and professional service firms. The course focuses on designing or improving service delivery.

473. Management of Technology. Examines the multiple impacts that technology has on the firm. Major issues of technology management will be discussed, including innovation, competitiveness, technology assessment, R & D strategy, positioning, manufacturing technologies and productivity. These issues are encountered not only in the technology-based company, but in any organization. Also covered will be the incorporation of a new technology into an existing industry and the new entrepreneur-based companies that are formed to work with a technology. The course will primarily focus on management issues, using as models new technologies such as biotechnology, superconductivity, microelectronics and fiberoptics.

480. The International Environment. Examines the environment in which multinational firms operate. It includes a discussion of current policy issues such as balance of payments, trade policy, and economic development. Special emphasis is given to the theory of the multinational firm and its role as a participant on the economic scene. That role is evaluated from the perspective of both the firm itself and the countries in which the firm operates.

482. International Finance. Examines the international economic environment in which firms and institutions operate. Provides a basic understanding of the primary market forces that shape a nation's trading and financing arrangements and how they affect the financing and investment decisions of firms and other agencies. Unravels the influence of monetary policy on foreign exchange markets, international capital markets, and a nation's balance of payments, and explains how trade affects real growth, resource allocation, and specialization among countries, with the objective of developing more careful analytical tools for decision-making by multinational corporations.

490. The Practicum. Gives the student a significant experience in applying the concepts, theories, and methods of analysis learned in the program to a real, complex problem of an economic enterprise. It should include the analysis of a situation and the explicit formulation of a problem. The important task of identifying and specifying the problem is an integral part of the course. The practicum report should propose a solution to the problem and should contain the supporting explanation and logic. The solution should be one that can be implemented, not requiring unavailable resources. Prerequisite: second-year standing in the M.B.A. program and consent of the Director of the M.B.A. Program and instructor.

491.1—9. Special Topics in Management. Permits the study of special topics in management on an occasional basis depending on the availability and interests of students and faculty. Examples of special topics include project management, legal and tax aspects of entrepreneurship, real estate finance, labor negotiations and arbitration, and knowledge management.

499. Independent Study. Allows the student an opportunity to engage in a study of special topics on an individual basis under the supervision of a faculty member. Prerequisite: second-year standing in the M.B.A. program and consent of the Director of the M.B.A. Program and instructor.

Doctor of Philosophy

These 500-level courses are available for Ph.D. students and qualified M.B.A.'s in the areas of accounting, marketing, operations management, finance, and organizational behavior. Typically one in each area will be offered each year. These courses are open to M.B.A. students desiring rigorous depth in an area with permission of the instructor. Unless specified otherwise, each course is worth three units of credit.

510. Bayesian Inference and Decision. This course focuses on methods of Bayesian inference and statistical decision theory, with emphasis on the general approach of modeling inferential and decision-making problems as well as the development of specific procedures for certain classes of problems. Topics include subjective probability, Bayesian inference and prediction, natural-conjugate families of distributions, Bayesian analysis for various processes, Bayesian estimation and hypothesis testing, comparisons with classical methods, decision-making criteria, utility theory, value of information, and sequential decision making.

531. Financial Accounting Seminar. Examines the nature of published financial statement information and its relationship with various economic variables. The list of related variables might include stock market data, bankruptcy filings, and the actions of various users of financial statement information, including management, investors, creditors, and regulators. The focus is on the current research methodologies and research efforts used to analyze the above relationships, as well as consideration of the underlying theoretical concepts. A background in masters-level accounting and finance is assumed.

532. Management Accounting Seminar. Examines information systems and their use in facilitating management decision making and organizational control. Emphasis will be placed on the appropriate research methodologies and paradigms including information economics, decision theory, and organizational theory. Topics include but are not limited to budgeting, incentive systems, performance evaluation, variance investigation, and cost allocation.

541. Organization Seminar—A Micro Focus. Focuses on individual and small group behavior in organizations. Theories of motivation, decision making, interpersonal behavior, group processes, and leadership are discussed. The course emphasizes a variety of research approaches and methods. The course will also include presentation of behavioral research by faculty members of the Fuqua School of Business and by other researchers.

542. Organization Seminar—A Macro Focus. Focuses on the organization and the subunits which make up the organization. Theories of organization, structure, decentralization, divisionalization, functional area integration, task design, incentives and rewards, information systems, and decision rules are discussed. These issues are developed with an orientation toward their choice and design for high performance. Throughout the course, there is an emphasis on appropriate research approaches and methods to investigate theoretical issues in various research settings. The course will also include

presentation of research by faculty members of the Fuqua School of Business and by other researchers.

551. Corporate Finance Seminars. Introduces the student to research areas in corporate finance. The emphasis of the course will depend on the research interests of the instructor, with one or more of the following topic areas to be explored in depth: capital budgeting, capital structure, mergers and acquisitions, financing alternatives, dividend policy, valuation methods, cost of capital, international finance, and cash management.

552. Investment Seminar. Surveys research in the investment area and explores in depth one or more problems in which research is currently active. The emphasis will be determined by the instructor from one or more of the following areas: valuation of risky securities, capital asset pricing model and extensions, capital market efficiency, portfolio theory, options and warrants, investment management, microstructure of security markets, and futures contracts.

561. Seminar in Quantitative Research in Marketing. Presents an overview of the quantitative techniques which are important in marketing research. Each model and technique will be examined in considerable detail so as to permit an understanding of its assumptions, structure, and usefulness. Topics covered will include the general data analysis techniques as well as models from advertising, new products, and pricing decisions.

562. Seminar in Behavioral Models in Marketing. Examines the development of research in consumer behavior. Major emphasis is given to theoretical developments and empirical research with a range of articles assigned for each topic. Topics include motivation and personality, perceptual processes, information search, choice processes, attitudes and persuasion, learning, and influence in consumer choice.

571. Operations Strategy Seminar. Pursues the latest developments in the strategy of operations in both the manufacturing and service sectors. Topics include the focused factory concept, Japanese manufacturing philosophy, technological policy toward new process development and toward new product introduction, vertical integration, choice of capacity and location, industry analysis, and the impact of government regulation. The seminar emphasizes the development of hypotheses about strategic topics and the empirical means by which they can be tested.

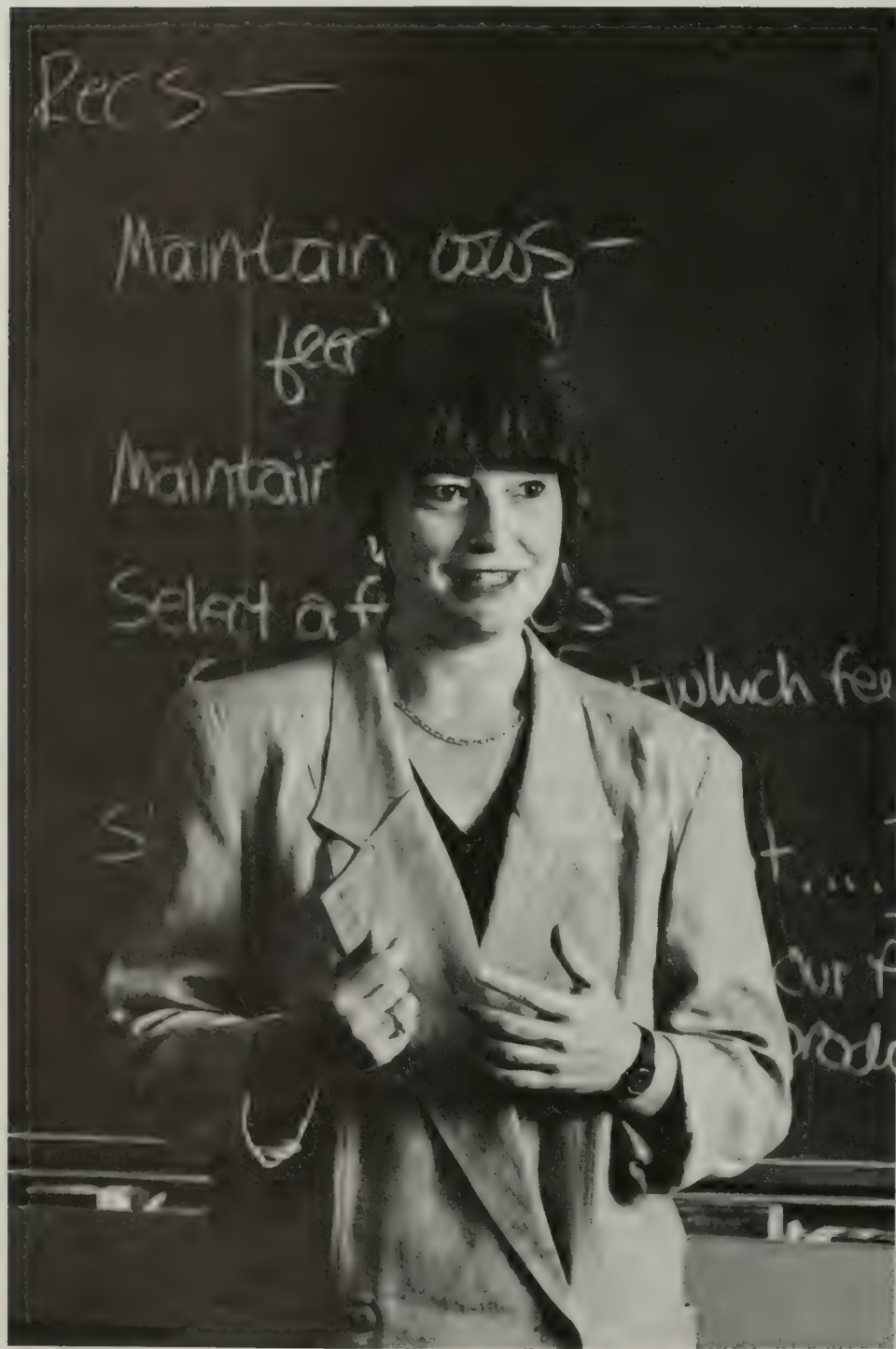
572. Seminar in Operational and Technological Tactics. Examines current issues in the day-to-day management of manufacturing and service delivery systems. Topics include material requirements planning, capacity requirements planning, quality of work life projects, productivity measurement and enhancement, implementation of new product introductions and production process modifications, quality assurance, production planning and scheduling, and logistics. The seminar concentrates on (1) the substance of recent developments, (2) the generation and test of hypotheses about tactical issues, and (3) the applicability of various optimization techniques to the advance of operation tactics.

597. Dissertation Research. For students actively pursuing research on their dissertation. Prerequisites: student must have passed the preliminary examination and have the consent of the Director of the Doctoral Program and the instructor. Credit to be arranged.

598. Independent Study. Allows the doctoral student the opportunity to engage in study or tutorial on special topics on an individual basis under the supervision of a faculty member. Prerequisites: Doctoral Program standing and consent of the Director of the Doctoral Program and instructor. Credit to be arranged.

599. Directed Research. Allows the doctoral student to engage in individual research projects under the supervision of a faculty member. Prerequisites: Doctoral Program standing and consent of the Director of the Doctoral Program and instructor. Credit to be arranged.

Faculty



Faculty

The faculty of the Fuqua School of Business has developed a national reputation for both high quality teaching and research. One of the unique characteristics of this faculty is its diverse set of interests and professional backgrounds. Often an individual faculty member's interests will span two or three different areas of expertise. This diversity of interests ensures that the students will be exposed to wide-ranging views of the environment in which they will live and work after completing their educational experience.

The student-faculty ratio in the school is maintained at a level permitting development of close professional relationships and encouraging individual assistance in academic and professional relationships. Activities are planned which maximize student-faculty interaction. Some of these are career-related while others are more involved with research and teaching activities.

A brief description of the background and main areas of interest of the faculty follows:

Yair Aharoni, Ph.D., *J. Paul Sticht Visiting Professor of International Business*; B.A., M.A. (Tel Aviv University); Ph.D. (Harvard University).

Professor Aharoni is Director and CEO of Jerusalem Institute of Management and is on the faculty of Tel Aviv University. He has also held appointments as Visiting Professor at Columbia, Stanford, Berkeley, and Boston University, among other schools. Professor Aharoni has served as a consultant for government and business organizations and has conducted numerous executive education programs. His teaching interests lie in the areas of business policy and strategy, business and environment, international business accounting, and comparative management. He serves on the editorial boards of several journals including the *Journal of International Business*, and is an Associate Editor of *Management Science*.

Alison H. Ashton, Ph.D., *Associate Professor of Business Administration*; B.S. (Louisiana State University), M.P.A., Ph.D. (The University of Texas at Austin).

Professor Ashton's academic interests are in behavioral decision theory and accounting. Her published research includes studies of auditors as decision makers, as well as managers as users of accounting information. She has taught behavioral decision theory and auditing at New York University, and has also taught at the University of Texas at Austin and the University of Alberta. She currently serves on the editorial board of *The Accounting Review*.

Robert H. Ashton, Ph.D., CPA, *Professor of Business Administration and Area Coordinator for Accounting*; B.S. (Middle Tennessee State University), M.B.A. (Florida State University), Ph.D. (University of Minnesota).

Prior to joining the Duke faculty, Professor Ashton was on the faculties of New York University and the University of Texas at Austin, and he held a visiting position as the Winspear Foundation Professor at the University of Alberta. His principal research interest involves behavioral decision theory, especially as it relates to accounting and auditing issues. He also does research on the effectiveness and efficiency of external audits and other topics. He has published a book, a monograph, and numerous articles in leading journals, and he serves on various editorial boards.

Sheldon D. Balbire, Ph.D., *Adjunct Associate Professor of Business Administration*; B.S. (Carnegie Institute of Technology), Ph.D. (University of North Carolina at Chapel Hill).

Professor Balbire's primary teaching interests are in the areas of corporate finance, corporate financial markets, and the management of financial institutions. His current research is centered on the rate structure of money and capital market instruments, as well as a number of projects relating to commercial bank management.

Helmy H. Baligh, Ph.D., *Professor of Business Administration*; B.A. (Oxford University), M.B.A., Ph.D. (University of California, Berkeley).

Professor Baligh joined the Duke faculty after teaching at the University of Illinois. His major research is in the analysis and design of economic structures for both business and social purposes. He has participated in the development of the Master of Business Administration programs at Duke and at the University of Illinois with emphasis on curriculum. His publications include *Vertical Market Structures* (with Leon E. Richartz) and several articles in the areas of transportation, hospital administration, marketing, economics, and organization structure design. He teaches in the fields of marketing, economic decision making, and organization design.

Joseph Battle, Ph.D., *Associate Professor of Business Administration*; B.S. (North Carolina Central University), M.S., Ph.D. (University of Michigan).

After serving as Special Assistant to the President of Shaw University, Professor Battle joined the Duke faculty, teaching in the areas of mathematics, probability and statistics, and economics. Research and consulting interests include the evaluation of federally funded poverty agencies with the Research Triangle Institute and local Durham organizations.

James R. Bettman, Ph.D., *Burlington Industries Professor of Business Administration, Director of the Ph.D. Program, and Area Coordinator of Marketing*; B.A., M.Phil., Ph.D. (Yale University).

Prior to joining the Fuqua School of Business, Professor Bettman taught at the Graduate School of Management, University of California, Los Angeles. He is the author of *An Information Processing Theory of Consumer Choice* as well as numerous articles in academic journals. Professor Bettman has also served as a consultant to government agencies, as a member of editorial boards of scholarly publications, and as a participant in numerous forums. He is currently coeditor of the *Journal of Consumer Research*.

William Boulding, *Assistant Professor of Business Administration*; B.A. (Swarthmore College), Ph.D. (University of Pennsylvania).

Professor Boulding is interested in model building relevant to managerial decision making, particularly in the area of advertising. His current research is concerned with using panel data on purchase and viewing behavior to better specify a media schedule for a firm. His teaching interests lie in the areas of advertising management and marketing research.

Douglas T. Breeden, Ph.D., *Associate Professor of Business Administration and Co-Director of the Future and Options Research Center*; S.B. (M.I.T.), M.A., Ph.D. (Stanford University).

Prior to joining the Fuqua School of Business faculty, Professor Breeden taught at Stanford University, the University of Chicago, and M.I.T. Professor Breeden's teaching and research interests are in the area of investments, futures, and options. He has published in the major finance journals and is Associate Editor of the *Journal of Financial Economics* and the *Journal of Financial and Quantitative Analysis*.

Marian C. Burke, Ph.D., *Associate Professor of Business Administration*; B.A. (College of William and Mary), M.S. (Virginia Commonwealth University), Ph.D. (University of California, Los Angeles).

Professor Burke's teaching interests include marketing strategy and planning, competitive analysis, and product management. Her current research activities are focused on an examination of the decision rules used by marketing managers in selecting marketing strategies and on issues of advertising effectiveness.

Richard M. Burton, D.B.A., *Professor of Business Administration*; B.S., M.B.A., D.B.A. (University of Illinois).

Professor Burton's primary research interests are in the design and management of organizations. His research is concerned with the design of the firm for coordinated operations across the functional areas of marketing, strategy, production, finance, and information systems. He teaches courses in organization design, management of innovation and research, and corporate structure and planning. Recent consulting experience includes projects for Siecor Corporation and Bell Canada.

Jane L. Butt, Ph.D., *Assistant Professor of Business Administration*; B.A. (University of Florida), M.S. (University of Central Florida), Ph.D. (University of Michigan).

Professor Butt teaches financial and managerial accounting. Her major research interests are in both the cognitive and incentive issues related to individual decision making, including auditing and managerial accounting applications. Her current research concerns frequency judgments in auditing.

Kalman J. Cohen, Ph.D., *Distinguished Bank Research Professor*; B.A. (Reed College), M.Litt. (Oxford University), M.S., Ph.D. (Carnegie-Mellon University).

Prior to joining the Duke faculty, Professor Cohen served for two years as Distinguished Professor of Finance and Economics and as the first Director of the Salomon Brothers Center for the Study of Financial Institutions at New York University. He also spent fourteen years on the faculty of Carnegie-Mellon University's Graduate School of Industrial Administration. He has written seven books and over eighty articles in the areas of banking and finance, strategic planning, economics, management science, and computer simulation. He has pioneered in the applications of management science techniques in banking. His current research focuses on the microstructure of security markets.

Taylor Cox, Jr., Ph.D., *Visiting Assistant Research Professor of Business Administration*; B.S., M.B.A. (Wayne State University), Ph.D. (The University of Arizona).

Prior to joining the Fuqua School of Business, Professor Cox was Director of the Division of Business and Economics at Winston-Salem State University. He now teaches manufacturing strategy and organization behavior courses. Professor Cox is engaged in research on contingency approaches to strategy effectiveness for manufacturing plants, on promotion and career mobility, and on race and gender effects in organization-behavior topics.

Richard L. Daniels, Ph.D., *Assistant Professor of Business Administration*; B.A. (Northwestern University), Ph.D. (University of California, Los Angeles).

Professor Daniels' research interests concern the multiattribute nature of common problems in production and operations management. His current research considers the effects of a range of sequencing and resource-allocation decisions on the performance of closed scheduling systems. His teaching interests include operations planning and control, job shop scheduling, and project management.

Mark D. Dibner, Ph.D., *Adjunct Assistant Professor*; B.A. (University of Pennsylvania); M.B.A. (Widener University); Ph.D. (Cornell University).

Professor Dibner received his B.A. in psychology and physiology and his Ph.D. in neurobiology and behavior. He is currently on the staff of the North Carolina Biotechnology Center and was formerly employed by E.I. du Pont de Nemours & Co. in neurobiology research. His primary research interest is the biotechnology industry, and he teaches in the area of management of technology.

Robert L. Dickens, M.S., CPA, *Professor of Accounting and Director of Undergraduate Studies*; B.S., M.S. (University of North Carolina).

Professor Dickens specializes in financial accounting and auditing. He has held offices in national organizations including Vice-President of the American Accounting Association and Chairman of the Committee on Education of the American Institute of Certified Public Accountants. He has served as consultant to the U.S. Office of Education and the U.S. Department of Agriculture on accounting and reporting matters. In 1966 he was awarded an honorary degree, LL.D., by Elon College.

Julie A. Edell, Ph.D., *Associate Professor of Business Administration*; B.A. (University of Nebraska), M.S., Ph.D. (Carnegie-Mellon University).

Professor Edell's teaching interests are in the area of marketing, with emphasis on advertising, marketing management, consumer behavior, and marketing research. Her current research is concerned with examining the effect of advertising communications upon consumer purchase behavior. Her work has appeared in the *Journal of Consumer Research*.

Kathleen Englemann, Ph.D., *Visiting Assistant Professor of Economics*; B.A. (Northwestern University); Ph.D. (University of California, Los Angeles).

Professor Englemann is a visiting professor of economics and finance. Her research interests include regulation, law and economics, and corporate finance, especially issues in corporate control. Her teaching interests include managerial economics, regulation, industrial organization, managerial finance, investments and corporate finance.

John D. Forsyth, D.B.A., *Professor of Business Administration*; B.A. (Queen's University), M.B.A. (University of Detroit), D.B.A. (University of Illinois).

Prior to coming to Duke, Professor Forsyth was Professor of Business Administration and Director of the Program for Executive Development at IMEDE Management Development Institute in Lausanne, Switzerland. His teaching and research interests are in the areas of international financial management, the planning and control of capital investments, and the design of corporate strategies.

F. Douglas Foster, Ph.D., *Assistant Professor of Business Administration*; B. Comm. (The University of Alberta), M.S., Ph.D. (Cornell University).

Professor Foster is interested in financial intermediation, capital market theory, and international finance. His current research is in investment banking, the microfoundations of short term trading, and proxy fights and corporate control. He teaches investments and international finance.

Jennifer Francis, Ph.D., *Assistant Professor*; B.S. (Bucknell University); M.S., Ph.D. (Cornell University)

Professor Francis's research and teaching interests are in the areas of financial and managerial accounting. Her current research focuses on corporate decision making, debt markets, financial distress models, and accounting for financial instruments.

John P. Gallagher, Ph.D., *Director of Computing*; B.A. (University of California, Berkeley), Ph.D. (University of California, Santa Barbara).

Professor Gallagher has extensive teaching experience in computer applications to education and problem solving. His research and teaching interests lie in the areas of computer application in support of managerial decision making, artificial intelligence and expert systems applications in management, and instructional psychology.

Grant W. Gardner, Ph.D., *Associate Professor of Business Administration*; B.S. (Southern Methodist University), A.M., Ph.D. (Harvard University).

Professor Gardner's primary areas of research are macroeconomics and international economics. His current research interest is central bank policy in an open economy. He teaches macroeconomics and international trade.

Christopher Gresov, Ph.D., *Assistant Professor of Business Administration*; B.A. (Lawrence University), M.A. (Boston University) M.B.A., M.Phil., Ph.D. (Columbia University).

Professor Gresov teaches courses in the areas of organizational behavior, design, and entrepreneurship. Prior to doctoral study, Professor Gresov was an associate in the corporate finance department of the First Boston Corporation. His research interests include organization and work-unit design, the management of innovation and change, and new ventures. He has published articles in the *Columbia Journal of World Business*, *The Academy of Management Proceedings*, and *Organization Study*.

Campbell R. Harvey, Ph.D., *Assistant Professor of Business Administration*; B.A. (Trinity College, University of Toronto), M.B.A. (York University, Toronto), Ph.D. (University of Chicago).

Professor Harvey's primary areas of research are investments, corporate finance, and pricing financial instruments. His empirical work tests predictions of the consumption-based asset pricing model. He teaches financial management and investment analysis.

Michael L. Hemler, Ph.D., *Assistant Professor of Business Administration*; B.S. (University of Dayton), M.B.A. (University of Chicago), Ph.D. (Washington University-Mathematics), Ph.D. (University of Chicago) forthcoming.

Prior to joining the Fuqua School of Business, Professor Hemler taught at Washington University in St. Louis and at the University of Chicago. His current research interests are in the area of options and futures. Winner of teaching awards at Washington University, Professor Hemler teaches courses in corporate finance and investments.

Joel C. Huber, Ph.D., *Associate Professor of Business Administration*; B.A. (Princeton University), M.B.A., Ph.D. (University of Pennsylvania).

Professor Huber came to the Fuqua School from the Columbia University School of Business and the Krannert Graduate School of Management, Purdue University. His teaching interests are in the areas of marketing and market research. He is a member of the American Marketing Association, the Association for Consumer Research, and the Psychometric Society.

Toby Y. Kahr, Ph.D., *Lecturer*; B.S. (Columbia University), M.A., Ph.D. (University of Illinois).

Professor Kahr is Assistant Vice-President and Director of Duke University Human Resources. Before coming to Duke he served as Director of Personnel Services at the University of Illinois and worked for Ford Motor Company in personnel administration. Professor Kahr teaches courses in human resources management and industrial relations.

Thomas F. Keller, Ph.D., CPA, *R. J. Reynolds Industries Professor of Business Administration and Dean*; A.B. (Duke University), M.B.A., Ph.D. (University of Michigan).

Professor Keller specializes in accounting. His current research and teaching interests are principally in the areas of financial accounting and reporting. He has held several offices in the American Accounting Association, including Editor of the *Accounting Review* (1972-75). He is the coauthor and coeditor of several books in financial accounting. During the summer and fall of 1975 under the auspices of a Fulbright grant, he lectured in Australia and the Far East on a variety of topics related to the development of accounting theory and standards. He is currently a Director of Hatteras Income Securities, Inc., LADD Furniture, Inc., Pennwalt Corporation, and Southeastern Growth Fund, Inc.

Naoki Kishimoto, Ph.D., *Assistant Professor of Business Administration*; B.A. (University of Tokyo), Ph.D. (New York University).

Professor Kishimoto's teaching interests include investments, the theory of capital markets, and corporate finance. His research interests lie in the areas of options, futures, and fixed-income securities. His current research is concerned with the pricing of multi-factor contingent claims under interest rate risk.

Dan J. Laughhunn, D.B.A., *Professor of Business Administration*. B.S. (Engineering Mechanics), M.B.A., D.B.A. (University of Illinois).

Professor Laughhunn has served as a consultant to industry and universities on a variety of topics related to planning and budgeting. His teaching and research interests deal with the application of quantitative techniques to problems in production and finance. Professor Laughhunn also has been actively engaged in teaching executive development programs, both at Duke and at other universities.

Arie Y. Lewin, Ph.D., *Professor of Business Administration*; B.S., M.S. (University of California, Los Angeles), M.S., Ph.D. (Carnegie-Mellon University).

Prior to coming to Duke, Professor Lewin was on the faculty of New York University for eight years. His research interests have been focused on applications of behavioral science to specific functional areas, organization design, person perception, and business participation in the formulation of public policy. Current research involves new approaches to measuring the effectiveness and efficiency of organizations and organization redesign, state owned enterprises in international trade, and the social, legal, and political environment of business. Professor Lewin is the coauthor of three books and his papers have appeared in numerous academic journals. Professor Lewin is the Organization Design Department Editor of *Management Science*.

Frederick W. Lindahl, *Assistant Professor of Business Administration*; B.S. (United States Air Force Academy), M.B.A. (Harvard University), Ph.D. (University of Chicago).

Professor Lindahl spent several years in public accounting prior to joining Duke. Financial accounting is his primary research interest, his current research being an empirical probability model of selection of accounting principles.

John M. McCann, Ph.D., *Associate Professor of Business Administration*; B.S.M.E., M.B.A. (University of Kentucky), Ph.D. (Krannert Graduate School of Industrial Administration, Purdue University).

Professor McCann served on the faculty of the Graduate School of Business and Public Administration at Cornell and has been a consultant with an economic modeling and research firm. He is Director of the Marketing Workbench Laboratory. His teaching interests are in the areas of marketing and econometrics and information systems. His current research involves the interface between marketing management and computerized management information systems.

Kevin F. McCardle, Ph.D., *Assistant Professor of Business Administration*; B.S. (Marquette University), M.A., Ph.D. (University of California, Los Angeles).

Professor McCardle's teaching interests lie in the area of probability and statistics, linear and dynamic programming, game theory, operations research and sequential analysis. His research involves sequential decision theory, applications of game theory, models of R&D, and corporate strategy.

John M. McCracken, M.B.A., *Adjunct Instructor*; B.S. (East Tennessee State University), M.B.A. (Duke University).

Mr. McCracken is President of John McCracken & Associates, Inc., the largest real estate appraisal and consulting firm in the Carolinas, and President of McCracken Properties, Inc., a real estate development firm. He has taught real estate investment analysis courses for the Appraisal Institute at colleges and universities throughout the country. He authored the American Institute's seminar on "What to Look for in an Appraisal" and coauthored a portion of *North Carolina Real Estate for Brokers and Salesmen*, a text on "Land Economics."

Wesley A. Magat, Ph.D., *Associate Professor of Business Administration*; A.B. (Brown University), M.S., Ph.D. (Northwestern University).

Professor Magat teaches primarily in the fields of managerial economics and regulatory management. He is currently involved in research in the areas of toxic chemicals regulation, procedures and reform, and enforcement of environmental regulations. He is a principal of the Duke Center for the Study of Business Regulation.

Steven F. Maier, Ph.D., *Adjunct Professor of Business Administration*; B.S. (Cornell University), M.S., Ph.D. (Stanford University).

Professor Maier is President and CEO of UAI Technology, Inc. and its University Analytics division. The company is based in the Research Triangle Park, N.C., and serves 200 banks and public utilities with its data products and computer models. Dr. Maier's research interests are in cash management and the microstructure of security markets. He is the author or coauthor of over forty journal articles and two books. He has also been active in Duke's executive development programs.

Joseph B. Mazzola, Ph.D., *Associate Professor of Business Administration*; B.S. (State University of New York at Stony Brook); M.A. (Wake Forest University); M.S., Ph.D. (Carnegie-Mellon University).

Professor Mazzola's teaching and research interests are in the areas of production/operations management, management science, and operations research. His current research involves topics arising in operations scheduling, production and inventory control, and mathematical programming. Prior to coming to Duke, Professor Mazzola served on the faculty of the University of North Carolina at Chapel Hill.

Michael J. Moore, Ph.D., *Assistant Professor of Business Administration and Acting Director of the Center for the Study of Business Regulation*; B.S. (Boston College), M.B.A. (Babson College), M.S., Ph.D. (University of Michigan).

Professor Moore's research interests are primarily in the areas of occupational safety and workers' compensation insurance. He also does research in marketing on the determinants of profitability and of industry structure. His teaching interests are in applied microeconomics, labor economics, and macroeconomics.

J. Keith Murnighan, Ph.D., *Visiting Professor of Business Administration*; B.S., M.S., Ph.D. (Purdue University).

Professor Murnighan is currently a Professor in the Organizational Behavior Group in the Department of Business Administration at the University of Illinois at Urbana-Champaign. His research focuses on the strategic behavior of individuals in interpersonal interactions, with specific projects on norm formation, cooperation in complex mixed-motive environments, the effectiveness of work teams, and the strategies used by mediators.

Thomas H. Naylor, Ph.D., *Professor of Economics and Professor of Business Administration* B.S. (Millsaps College), B.S. (Columbia University), M.B.A. (Indiana University), Ph.D. (Tulane University).

Professor Naylor has been a member of the faculty of the Department of Economics at Duke University since 1964. He is the author of 22 books and over 125 articles. Professor Naylor's consulting experience includes service to over 100 national and international organizations. He has lectured at universities throughout the world and is a member of several editorial boards. He is Director of the Center for Corporate Economics and Strategy at Duke.

Robert Nau, Ph.D., *Assistant Professor of Business Administration*; B.A. (University of California at San Diego), M.S., Ph.D. (University of California at Berkeley).

Subject probability theory, computer-based decision analysis, and time series forecasting are among Professor Nau's research interests. His articles have appeared in *Management Science* and *Journal of the Operational Research Society*. Prior to coming to the Fuqua School, Professor Nau taught at Tulane University and served as Manager of Information Systems at Liberty Mutual Insurance Company.

Richard B. Palmer, Ph.D., *Executive-in-Residence*; A.B. (Lehigh University), Ph.D. (The Johns Hopkins University).

Prior to joining the Fuqua School of Business, Dr. Palmer held the position of President of Texaco Canada, Inc. His thirty-two-year career with Texaco has included worldwide responsibilities.

John W. Payne, Ph.D., *Professor of Business Administration, Area Coordinator for Organizational Behavior and Director of the Center for Decision Studies*; B.A., M.A., Ph.D. (University of California, Irvine).

Prior to coming to Duke, Professor Payne was on the faculty of the Graduate School of Business at the University of Chicago. His primary research activities deal with individual decision behavior. He has investigated decision making under risk, consumer choice behavior, and the design of computer-based support systems. He teaches courses in decision theory, organizational behavior, and consumer behavior.

David W. Peterson, Ph.D., *Adjunct Professor of Business Administration*; B.A. (University of Wisconsin), M.S., Ph.D. (Stanford University).

Professor Peterson's teaching and research activities are in the fields of mathematical modeling, statistical analysis, and operations research. His recent publications have dealt with control theory, portfolio selection, long- and short-range planning, and regulated utilities. He is a consultant to corporate and governmental litigation teams on matters pertaining to the structuring of statistically based legal positions.

Donna Rae Philbrick, Ph.D., *Assistant Professor of Business Administration*; B.S. (University of Oregon), M.B.A., Ph.D. (Cornell University).

Professor Philbrick is interested in effects of accounting information on the financial markets. She has published in the *Journal of Accounting Research*. Her teaching interests center on financial accounting at the elementary as well as the intermediate and advanced levels. Professor Philbrick taught at the University of Oregon before joining the Fuqua School faculty.

Robert E. Reinheimer Ph.D., *Associate Professor of the Practice of Management Communication*; B.A., M.A. (California State University, Fullerton), Ph.D. (University of Kansas).

Professor Reinheimer came to the Fuqua School from the University of Virginia. His primary areas of interests are in speech communication and small group communication. He has taught a number of courses and executive development programs in these areas, and is responsible for the Management Communication courses in the M.B.A. and Executive M.B.A. programs.

William E. Ricks, Ph.D., CPA, *Associate Professor of Business Administration*; B.S. (University of New Orleans), Ph.D. (University of California, Berkeley).

Professor Ricks has had extensive teaching experience in both managerial and financial accounting in the M.B.A. program at the University of California at Berkeley. He holds a CPA certificate in Louisiana and has wide audit experience in oil, gas, and banking. His major research interest is financial accounting at both the individual and market level. His published research focuses on the stock market's reaction to accounting information.

Elaine Romanelli, Ph.D., *Assistant Professor of Business Administration and Director of the Center for Entrepreneurial Studies*; A.B. (University of California, Berkeley); M.B.A., Ph.D. (Columbia University).

Professor Romanelli teaches in the areas of organization behavior and new venture management. Her research interests include the strategies and processes of organization creation, and patterns of evolution for both new and large firms. She has published in *Management Science* and *Research in Organizational Behavior*.

Jeffrey L. Rummel, Ph.D., *Assistant Professor of Business Administration*; B.A. (Capital University), M.S., Ph.D. (University of Rochester).

Professor Rummel's teaching and research interests are in the areas of manufacturing and operations management, management science, and mathematical programming. His dissertation is titled, "Costs and Performance Measurement in Batch Manufacturing," and his other current research concerns automated scheduling and lot sizing systems.

Rakesh K. Sarin, Ph.D., *Professor of Business Administration*; B.E., (M.R. Engineering College); M.B.A. (Indian Institute of Management); M.S., Ph.D. (University of California, Los Angeles).

Professor Sarin's research interests are in decision theory and production and operations management. He is coauthor of *Modern Production/Operations Management*, has published extensively in academic journals, and has been awarded grants by NSF and ONR. He formerly taught at the Indian Institute of Management, Purdue University, and the University of California, Los Angeles.

William A. Sax, B.S., *Executive-in-Residence*; B.S. (St. Louis University).

Prior to joining the Fuqua School of Business, Mr. Sax worked for thirty-six years in the oil industry, the last thirty-one years with Unocal Corporation (formerly Union Oil Company of California). He was Vice-President of International Oil and Gas Exploration.

James E. Sheldon, L.L.M. *Adjunct Assistant Professor of Business Administration*; B.A. (Dartmouth College), J.D. (University of California), L.L.M. (Boston University Law School), L.L.M. (University of Stockholm).

Before joining the Fuqua School of Business, Mr. Sheldon practiced corporate, securities, and tax law for seven years in Boston and San Francisco. His teaching and research interests include business and tax planning. He is a member of the California, Massachusetts, and North Carolina Bar Associations.

Blair H. Sheppard, Ph.D., *Associate Professor of Business Administration and Director of the Center for Human Resource Management*; B.A., M.A. (University of Western Ontario), Ph.D. (University of Illinois).

Professor Sheppard joined the Fuqua School of Business from the faculty of Management at McGill University. He teaches in organization behavior, personnel management, and industrial relations. His research interests include conflict resolution and group effectiveness. He has published in the *Journal of Personality and Social Psychology*, *Research in Organizational Behavior*, and *Journal of Applied Social Psychology*. His consulting has been in the area of human resource management.

Richard Staelin, Ph.D., *Associate Dean for Faculty Affairs and Edward and Rose Donnell Professor of Business Administration*; B.S., M.B.A., Ph.D. (University of Michigan).

Prior to joining Duke's faculty, Professor Staelin served as Professor and Associate Dean at the Graduate School of Industrial Administration, Carnegie-Mellon University. He was also a Visiting Professor at the Australian Graduate School of Management and at the University of Chicago. His professional activities include consulting work for both the public and private sectors, active participation in professional associations, service on editorial boards of four academic journals, and publication of a book and over forty journal articles. He is presently Area Editor of *Marketing Science*. Professor Staelin's current research interests include information search and channel management.

Jens A. Stephan, Ph.D., *Assistant Professor of Business Administration*; B.S.M.E. (University of Michigan), M.B.A. (Pennsylvania State University), Ph.D. (Cornell University).

Professor Stephan's teaching interests are in managerial and financial accounting. He has done research on the ability to measure the impact of firm-specific events on security prices, and his current research investigates the role of prices as a source of information for security market traders.

Sebastian Teunissen, *Visiting Instructor*; B.A. (University of Guelph), M.A., Ph.D. anticipated (Duke University).

Prior to coming to Duke, Sebastian Teunissen was Assistant Secretary in the Department of Finance for the Government of Papua New Guinea. He has also been employed in the securities industry and has been on the faculties of both the University of Guelph and North Carolina State University. His current research concerns international securities transactions, and he teaches courses in financial management.

Anne S. Tsui, Ph.D., *Associate Professor of Business Administration*; B.A., M.A. (University of Minnesota); Ph.D. (University of California, Los Angeles).

Professor Tsui teaches in organization behavior and human resources management. Her research interests focus on the effectiveness of managers and the human resource management function. She has published in the journals of *Organizational Behavior and Human Performance*, *Industrial Relations*, and the *Academy of Management Journal*. Her professional experience includes employment and consulting with Control Data Corporation.

James H. Vander Weide, Ph.D., *Research Professor of Business Administration*; B.S. (Cornell University), Ph.D. (Northwestern University).

Professor Vander Weide's primary research and teaching interests are in the areas of corporate finance and managerial economics. He has written papers on topics such as cash management, capital budgeting, portfolio analysis, and the economic effects of government regulation. He has also served as a consultant to banks in the area of cash management. He has testified as an expert witness on the cost of capital before the Public Utility Commission of several states.

S. Viswanathan, Ph.D., *Assistant Professor of Business Administration*; B.S. (University of Bombay), Ph.D. (Northwestern University).

Professor Viswanathan teaches corporate finance. His major research interests are corporate finance, market microstructure and information economics. His prior research has focused on how financial decisions are used to signal managerial information about firm's future prospects. Currently, he is working on why volumes, bid-ask spreads and returns on the stock exchange fluctuate systematically through the week.

Robert E. Whaley, Ph.D., *Associate Professor of Business Administration, Co-Director of the Futures and Options Research Center and Area Coordinator for Finance and Economics*; B. Comm. (University of Alberta), M.B.A., Ph.D. (University of Toronto).

Prior to joining the Fuqua School of Business faculty, Professor Whaley taught at Vanderbilt University, the University of Alberta, and the University of Chicago. He also served as Vice-President-Research with GNP Consulting in Chicago and as Director of the Institute for Financial Research at the University of Alberta. Professor Whaley's research interests are currently in the area of financial futures and options.

Charles H. Whiteman, Ph.D., *Visiting Associate Professor of Economics*; B.A. (University of Kansas); Ph.D. (University of Minnesota).

Professor Whiteman is currently Associate Professor of Economics at the University of Iowa and is visiting Duke during the fall semester. Professor Whiteman's primary teaching fields are macroeconomics, monetary economics, and time series analysis. He was voted M.B.A. Professor of the Year at Iowa in 1986. Professor Whiteman is the author of two books and has published papers in the *American Economic Review*, *Econometrica*, and other academic journals. His research interests involve the dynamic game-theoretic approach to policy making and the application of linear rational expectations models to the study of financial markets.

Andrew B. Widmark, J.D., *Adjunct Instructor*; B.S. (Fairleigh Dickinson University), M.B.A. (University of Pennsylvania), J.D. (Rutgers University).

Mr. Widmark is President and Chief Executive Officer of Galesi Realty Corporation in Wayne, New Jersey, which owns and manages shopping centers and office buildings. He practices tax, real estate and business law, and has taught real estate courses at the Rutgers University School of Law.

Robert L. Winkler, Ph.D., *Calvin Bryce Hoover Professor of Business Administration and Area Coordinator for Quantitative Methods and Operations Management*; B.S. (University of Illinois), Ph.D. (University of Chicago).

Prior to joining the Duke faculty, Professor Winkler served as Distinguished Professor of Quantitative Business Analysis at Indiana University, and he has held visiting positions at the University of Washington, the International Institute for Applied Systems Analysis, Stanford University, and INSEAD. His primary research interests involve Bayesian statistics, decision analysis, risk assessment, and probability forecasting. Professor Winkler is the author of numerous research articles and books, is Departmental Editor for *Decision Analysis for Management Science*, and serves on the editorial boards of several other journals.

Edwin D. Wolf, M.S., CPA, *Executive-in-Residence*; B.S. (New York University), M.S. (Columbia University).

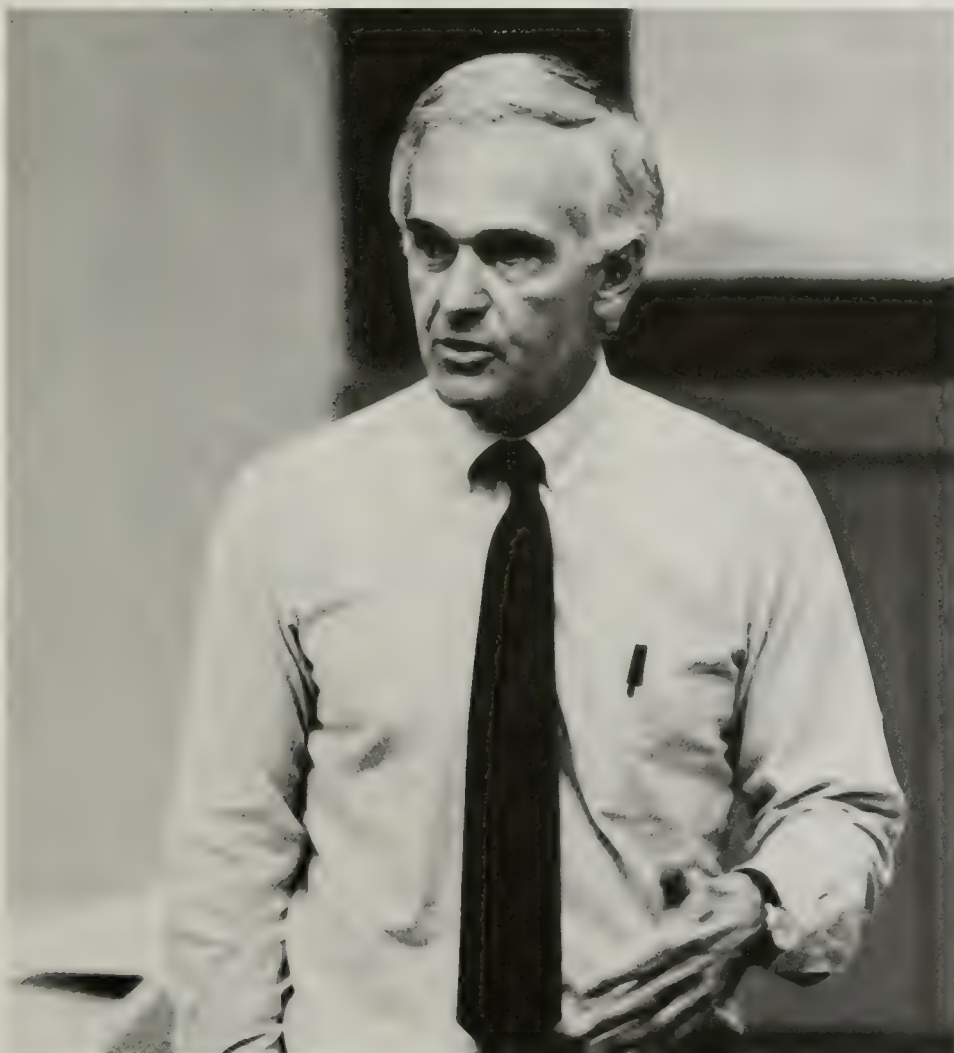
Mr. Wolf was a partner in the New York office of Peat, Marwick, Mitchell & Co. prior to joining the Fuqua School's faculty as Executive-in-Residence. His responsibilities involved the analysis, design, and implementation of systems and techniques for improving managerial and operational control of client organizations.

William L. Yaeger, J.D., *Adjunct Associate Professor of Business Administration*; B.A. (Duke University), J.D. (Emory University).

Mr. Yaeger teaches the course Legal Environment of the Firm in the M.B.A. programs. He is in private practice in Durham, North Carolina, with an emphasis on bankruptcy and insolvency. Mr. Yaeger is a member of the North Carolina Bar Association and the National Association of Bankruptcy Trustees.

Valarie A. Zeithaml, D.B.A., *Visiting Associate Professor of Marketing*; B.A. (Gettysburg College); M.B.A., D.B.A. (University of Maryland).

Professor Zeithaml teaches marketing strategy and the marketing of services. From 1980-86 she was on the faculty at Texas A&M University. Her research has focused on consumer evaluation of services, consumer perceptions of price, and service/product quality. She has published numerous articles in academic journals, serves as a member of the editorial review board of *The Journal of Marketing*, and is editor of *The Review of Marketing*.



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bulletin of
Duke University
1988-89

*School of Forestry and
Environmental Studies*



bulletin of
Duke University
1988-89

*School of Forestry and
Environmental Studies*

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University Administration

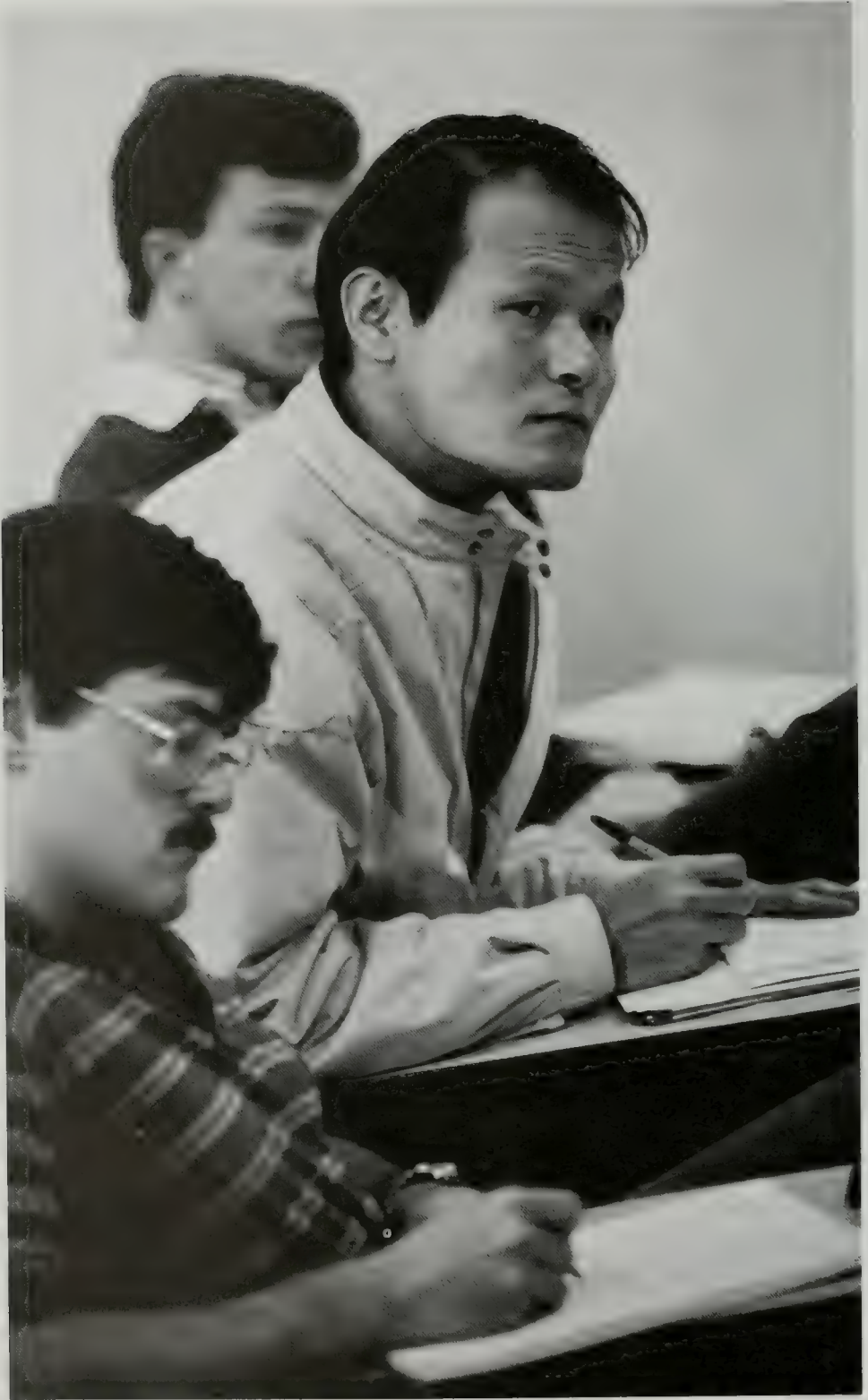
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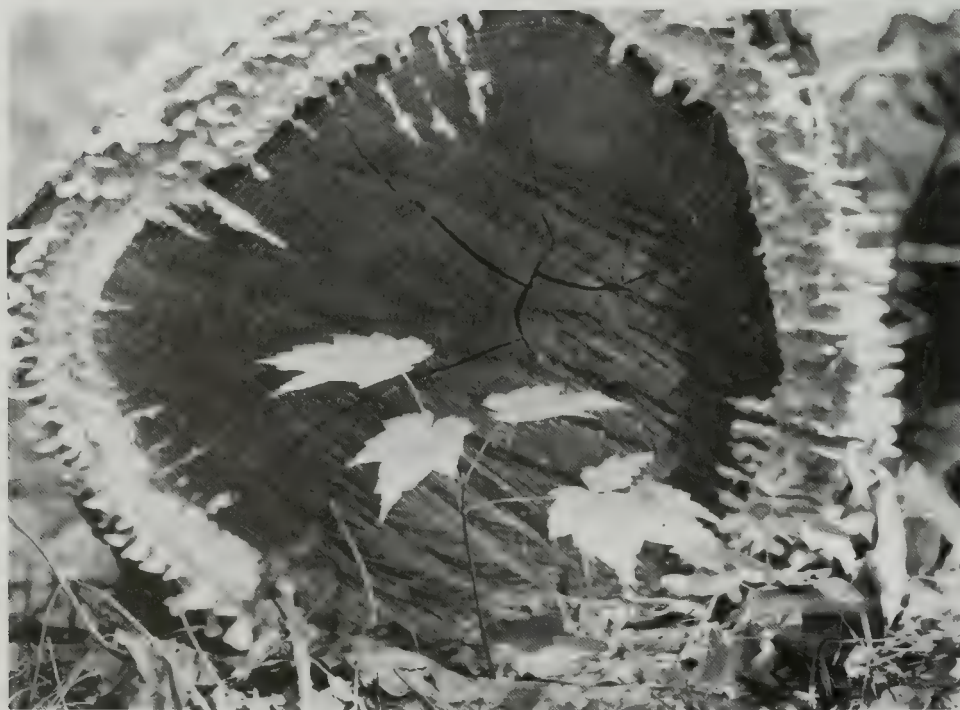
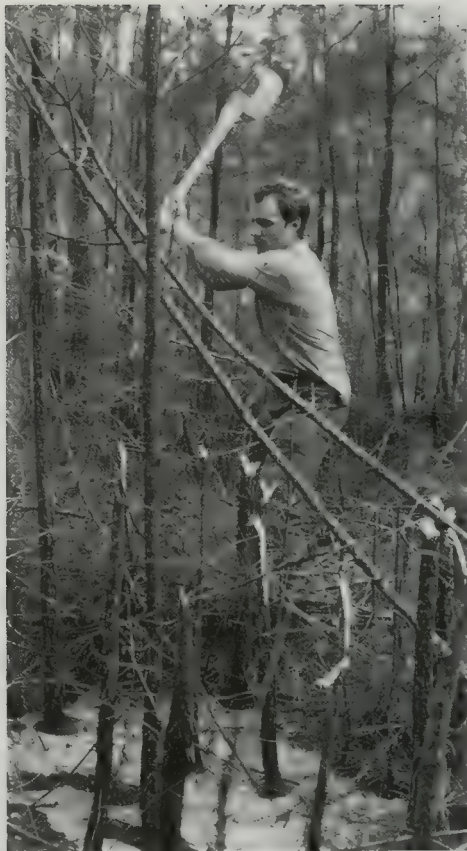


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School of Forestry and Environmental Studies Calendar*

1988

August	
22	Orientation for fall semester
23-24	Registration of new and nonregistered returning students
29	Fall semester classes begin
30	Drop/add begins
September	
9	Drop/add ends
October	
15-18	Fall break
November	
7-8	Registration for spring semester, 1989
23-27	Thanksgiving recess (begins at 12:30 p.m. Wednesday)
December	
2	Fall semester classes end
3-11	Graduate reading period
12-17	Final examinations

1989

January	
9	Orientation for spring semester
11	Registration of new and nonregistered returning students
12	Spring semester classes begin
13	Drop/add begins
27	Drop/add ends
March	
11-19	Spring break
27-28	Registration for fall semester, 1989
April	
21	Spring semester classes end
22-30	Graduate reading period
May	
1-6	Final examinations
14	Commencement

*The dates in this calendar are tentative and subject to change.



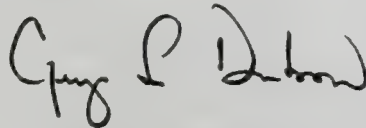
To the Prospective Student

The School of Forestry and Environmental Studies, a professional-graduate school functioning within a great university, focuses its efforts on forestry, natural resources, and the environment. Its Master of Forestry degree is designed to prepare professional forest managers of the future in both the public and private sectors. Its Master of Environmental Management degree is intended for those who wish to prepare themselves in some aspect of the broader field of natural resources. The school offers concurrent degrees with the Fuqua School of Business and the Institute of Policy Sciences and Public Affairs. Its doctoral program is designed for those interested in teaching or in research in a university, branch of government, or industry.

We seek able students who are motivated to research and analyze complex natural resource and environmental problems. We accept undergraduates from many educational backgrounds. However, we expect that each degree candidate will become highly disciplined in some aspect of the analysis of resource problems during the period of study at Duke.

To complement our traditional modes of education, we have introduced several new educational programs during the past few years. A number of students participate in the Integrated Case Studies Program in Natural Resource Analysis and the Integrated Toxicology Program described in this bulletin. Our Senior Professional Program is designed to meet the needs of practicing professionals who wish to update practical skills or to pursue an advanced degree. Internships are available to qualified students. Supporting all of these educational programs are the research interests of an outstanding faculty committed to the advancement of knowledge concerning resources and the environment.

The following pages provide information about our degrees, programs of study, and research. We invite you to visit the Duke campus to meet our students, faculty, and professional staff, and to learn about our school first hand.

A handwritten signature in black ink, reading "George F. Dutrow". The signature is fluid and cursive, with the first name "George" and last name "Dutrow" clearly legible.

George F. Dutrow
*Dean, School of Forestry and
Environmental Studies*

General Information



Objectives

The School of Forestry and Environmental Studies pursues a broadly based program of research and education at the graduate level. Its programs are designed to educate professionals, scientists, and academicians to analyze a wide range of environmental and natural resource problems.

After nearly fifty years of forestry research and education at Duke, the school has shifted from a focus on woodland productivity and protection to a focus on ecosystem productivity and protection. The land and its associated components, including plant and animal communities, water, and air, are integral parts of the orientation of the school. The emphasis is on defining objectives for forest and natural resource management, understanding the interrelated constraints—physical, biological, ecological, economic, legal, and social—and devising and testing alternative management solutions. Indeed, problem analysis is the central focus of all programs of the school. The student will learn the capabilities and limitations of quantitative analysis and seek imaginative solutions for problems requiring a qualitative approach.

The school is particularly interested in the development of a holistic view of the environment and natural resources. This viewpoint requires the application of knowledge from the natural, social, and management sciences. Students are encouraged to integrate studies in natural resource science, systems science, economics, and policy in the pursuit of a particular program of study. The approach is first to identify problems, then to synthesize information, to develop critical analyses, and finally to plan and design solutions.

This approach is pursued by research, formal courses, seminars, field studies, and special conferences and symposia. Informal contact among students, faculty, alumni, and practicing professionals forms a strong part of the program. A number of academic and professional disciplines are represented on the faculty, and practicing professionals are frequently involved in teaching as well as in research. Several government career employees are usually in residence as adjunct faculty members.

The school periodically sponsors conferences and symposia on subjects of major interest and concern to persons involved in resource management. These offer current viewpoints of outstanding individuals concerned with various aspects of natural resources and the environment.

Programs are designed for students drawn from a wide variety of undergraduate backgrounds in the natural and social sciences and from programs in forestry, engineering, business, and environmental studies. The goal is to help all students acquire the basic technical skills, knowledge, insight, and methods of analysis for solving natural resource and environmental problems.

History

Duke University developed from Union Institute, a small school established in 1838 in Randolph County, North Carolina. The name was changed to Normal College in 1851, and in 1859, to Trinity College. The college was moved to Durham in 1892. With the establishment of the James B. Duke Indenture of Trust in 1924, Trinity College became Duke University. At the outset, the University developed around a core of undergraduate programs. Later the Graduate School and professional schools of Medicine, Nursing, Law, Engineering, Divinity, and Business Administration were added. In 1932, forestry instruction was offered for students of Trinity College, and in 1938 the School of Forestry was established as a graduate professional school under the direction of Dean Clarence F. Korstian. The Master of Forestry degree was offered initially and later the A.M., M.S., and Ph.D. were offered through the Graduate School. The school's forestry program has been fully accredited by the Society of American Foresters since 1939.

Dr. Korstian joined the faculty in 1931 as the first director of the Duke Forest. Brought to Durham by Dr. William P. Few, president of Duke at the time, Dr. Korstian set out to develop a "demonstration and research forest" that would serve as a model for owners of small tracts of timber in the South. During this period and for a number of years to follow, research focused primarily on problems of culture, management, and utilization of the softwoods and hardwoods of southern forests.

During the 1930s the faculty of the school was gradually expanded to include a number of research foresters who made substantial contributions to forestry in the Southeast. William Maughan, who specialized in forest management, joined the faculty in 1931. In 1935, Theodore S. Coile, a specialist in forest soils, was added to the faculty. Ellwood S. Harrar, a wood technologist, and Francis X. Schumacher, widely known for his contribution to forest measurements, arrived at Duke in 1937. In 1939, the school rounded out its initial faculty with three distinguished scientists: Roy B. Thomson in economics, James A. Beal in entomology, and Albert E. Wackerman in forest utilization. This faculty established and brought early recognition to the school. Later, faculty were added in silviculture, pathology, physiology, ecology, and biometeorology.

The expanded faculty was soon responsible for shifting the emphasis from southern forestry to research and teaching of forestry with a national and international point of view. Consequently, graduates of the school have found employment in public agencies, forest industries, education, and research in all parts of the nation.

Growing national concern with natural resources and environmental problems led to a new teaching and research emphasis in the 1970s. A new program in natural resource ecology, focusing on ecologically based land use planning, was added to the traditional forest science and management curriculum. In 1974 the name was changed to the School of Forestry and Environmental Studies and a new degree was added, the Master of Environmental Management.

Location

Duke University is situated on the outskirts of Durham, a city of over 100,000 inhabitants, in the central piedmont region of North Carolina. The Appalachian escarpment lies approximately 100 miles to the west of Durham and the coastal plain is but a short distance to the east. The school is thus ideally situated near areas of ecological and topographic diversity which offer many opportunities for recreation as well as study.

Piedmont North Carolina is characterized by a rolling, forested topography interspersed with small farms and rural communities in addition to the state's largest cities. The climax forests of the piedmont are hardwoods; however, human disturbance over a period of many years has resulted in the establishment of many forests of the native southern pines. It is in regions like piedmont North Carolina that many of the non-

industrial private forests of the United States are located. These forests are destined to provide much of the increase of wood and wood fiber to be needed by the United States in the twenty-first century.

The southern Appalachians are widely known for their unusual history, picturesque topography, and wide range of flora and fauna. Here the typical hardwood forests which dominate at lower elevations give way to forests of spruce and fir at higher elevations. These forests supply a variety of specialty woods for North Carolina furniture manufacturers and for other industries. The region's numerous recreation areas are widely used for hiking, fishing, skiing, and other outdoor activities.

The coastal plain of North Carolina, already well known for its agricultural production, is now being used extensively by many of the nation's forest industries for plantations of the native pines. The extent of the intensive forestry practices in the coastal plains of North Carolina and other southern states is unmatched elsewhere in the world.

Coastal wetlands and estuaries, now recognized as one of the nurseries of world fisheries, offer abundant and valuable natural resources. North Carolina's Outer Banks and the barrier islands of the other southeastern states serve as protection for these coastal waters. The rapidly increasing population and development in this region make proper management of its natural resources particularly important to the nation.

Because of the school's central location near these regions of vital ecological importance, students are afforded the opportunity to study many current environmental problems in the field. Both the opportunity and the challenge exist to analyze these pressing problems and to develop sound approaches to their management.

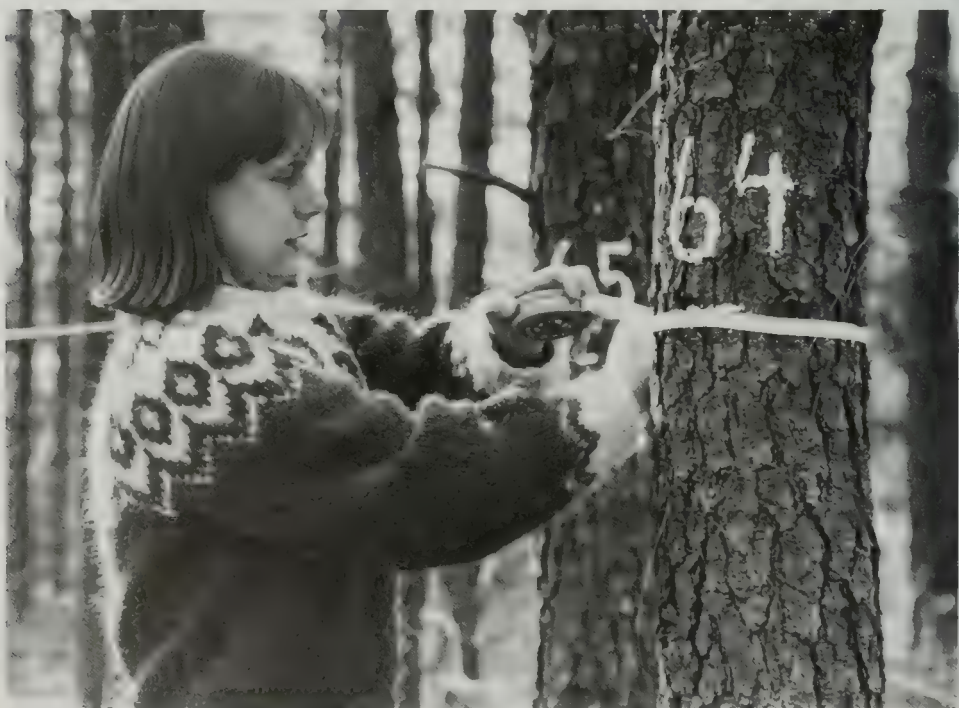
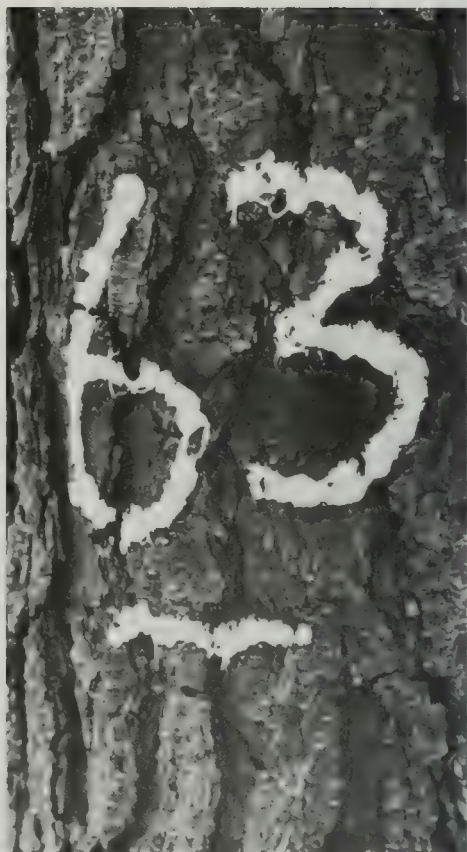
Facilities

The School of Forestry and Environmental Studies is housed in the south wing of the Biological Sciences Building on the West Campus. Laboratory and supporting facilities are provided for both teaching and research in all subject matter areas offered in the school. Classrooms and seminar rooms are available in the school and in other parts of the building. A clubroom, offices, general study space, and a microcomputer laboratory are provided for students.

Computer Facilities. The Duke University Center for Academic Computing provides a wide range of facilities and services for the Duke community. Several clusters of interactive data terminals and personal computers are maintained in various locations on campus. The data terminals, connected to Duke's Equinox data switch, allow users to selectively access on-campus resources, such as the AT&T 3B2 minicomputers and the on-line Bibliographic Information System, or to connect to the Triangle Universities Computation Center (TUCC) mainframe system via high-speed microwave transmission. The TUCC system, a regional computer network centered in the nearby Research Triangle Park, includes an IBM 3081 computer and an FPS-164 attached processor. TUCC users also have access to the BITNET system which allows electronic communication with most other universities in the United States. Services offered by the Center for Academic Computing include general consulting, a free newsletter, and a regular series of short courses. Faculty and students in the School of Forestry and Environmental Studies have 24-hour access to a cluster of interactive terminals in the Biological Sciences building as well as the school's own microcomputer laboratory. Personal computer workshops are conducted by school staff at the beginning of each semester.

Libraries. The combined university libraries, including the main Perkins Library and twelve other school or branch libraries, contain over 3,300,000 volumes. About 150,000 volumes are added annually. Approximately 10,300 periodicals and over 166 newspapers are received. The Biology-Forestry Library, located in the Biological Sciences Building, contains about 125,000 volumes, and receives about 900 periodicals.

Greenhouses and the Phytotron. Adjoining the Biological Sciences Building are excellent facilities for biological investigations under controlled conditions. The phytotron



contains fifty separately controlled growth chambers and greenhouses which can be used to grow plants under a variety of environmental conditions. The phytotron is one of few such facilities in the United States.

Research Triangle Park. Numerous industrial and governmental organizations have established research facilities in the Research Triangle Park, ten miles from the Duke campus. Government facilities include the National Environmental Research Center of the Environmental Protection Agency, the Forestry Sciences Laboratory of the United States Forest Service Southeastern Forest Experiment Station, and the National Institute of Environmental Health Sciences. These laboratories provide opportunities for student research and internships in some of the most advanced facilities in the nation.

Neighboring Universities. Through a reciprocal agreement, Duke students may supplement their education in forestry and environmental studies by taking courses in related fields at the University of North Carolina in Chapel Hill, North Carolina State University in Raleigh, and North Carolina Central University in Durham. Graduate students of Duke University and the University of North Carolina at Chapel Hill are granted library loan privileges in both universities.

The Duke Forest

The Duke Forest comprises approximately 8,300 acres of land in five major divisions and several smaller tracts. A ten-minute walk from campus will take one well into many parts of the Durham Division, and a network of roads and fire trails makes almost all areas of the forest easily accessible.

The forest lies primarily in Durham and Orange counties, near the eastern edge of the piedmont plateau, and supports a cross section of the woodlands found in the upper coastal plain and lower piedmont of the Southeast. A variety of timber types, plant species, soils, topography and past land use conditions are represented. Elevations range from 260 to 760 feet. Soils of the region are derived from such diverse parent materials as metamorphic rock of the Carolina slate formation, granite, Triassic sedimentary rock, and basic intrusives.

The Duke Forest, as it is known today, had its origins in the mid-1920s when the University administration bought many small farms and interspersed forest land as buffer areas for the main campus and as an investment for the future. The forest was placed under intensive management in 1931 by Dr. Clarence Korstian, its first director. In its early development, several basic objectives were emphasized: (1) demonstration of timber management techniques on a practical and economic basis, (2) development of an experimental forest for research in the sciences associated with timber growing, and (3) development of the area as an outdoor laboratory for students of forestry.

Modification of these early objectives has arisen, in part, through a greatly increased interest and dependence on the forest for research in the areas of zoology, botany, and ecology by faculty and students at Duke and neighboring universities. Background information useful to researchers is provided by the forest; it covers such features as soils, topography, inventory, plantation, and cultural records as well as a bibliography of past and current studies. Current work on problems associated with developmental pressures at the urban-rural interface and integrated approaches to natural resource management have multiplied the forest's value and benefit as a resource.

Since 1976, the Duke Forest has been included in a nationwide network of research sites selected by the Institute of Ecology under a program sponsored by the National Science Foundation. These sites, designated as experimental ecological reserves, were selected to provide a wide range of conditions and habitat types for long-term scientific research in a multitude of disciplines.

The forest also serves in an educational and recreational capacity for residents of the Durham and Chapel Hill communities. Hiking, picnicking, jogging, and nature study are particularly popular pastimes.

This natural outdoor laboratory is an invaluable supplement to the instructional, research, and recreational facilities of the school, the University, and the region.

A comprehensive forest management plan, completed in 1981, provides a framework of basic guidelines and policies enabling effective utilization of the forest's potential. Development of the management plan was coordinated by a team of faculty, staff, and students representing a broad range of disciplines. Timber management, recreation, water quality, unique plant communities, historical and archaeological sites, and data management are a few of the criteria that were studied as part of the planning process. The plan concentrates on overlaying compatible uses of the forest in as many areas as possible. The completed document facilitates sound management and decision making, and it is flexible enough to allow adaptation to the changing needs and interests of all users of the forest.

The forest provides assistantships to several students in the school each year. Some of these are associated with research, others with the day-to-day operation and management of the forest.

The Faculty

The faculty of the School of Forestry and Environmental Studies specialize in diverse areas of natural resources and the environment. They are committed to excellence in teaching and to the development of research on current environmental issues facing the nation. A favorable faculty-student ratio insures small classes, individualized instruction, and careful supervision of independent study.

Highly qualified professionals from the United States Forest Service, forestry consulting firms, conservation organizations, and other areas of specialization serve as adjunct faculty members. Professors in botany, engineering, history, and marine science at Duke and the Department of City and Regional Planning at the University of North Carolina also hold joint appointments on the faculty. Scholars from foundations, private industry, and government service often visit the school to conduct conferences and symposia, to consult with faculty and students, and to teach special courses.

The faculty is engaged in a dynamic program of research, much of which is oriented toward the analysis of contemporary natural resource and environmental problems. Students are encouraged to assist in these projects to involve themselves in real world situations. Many of the continuing areas of faculty research are described in the faculty section of this bulletin. Some faculty members are also involved in the development of case studies, a new approach to graduate training in resource ecology and management.

The school enjoys close relationships with other professional schools and departments within the University as well as at neighboring institutions. Duke's departments of botany and economics, the School of Engineering, and the Institute of Policy Sciences and Public Affairs, for example, offer courses which are highly complementary to forestry and environmental studies. Faculty from these and other departments and institutions actively cooperate in research projects and sit on the graduate committees of students in the school.

The Students

A typical entering class at the School of Forestry and Environmental Studies consists of approximately sixty professional students from diverse backgrounds and geographic areas. In an average class, 45 percent of the students are from the northeast United States and 30 percent are from the South. Approximately 20 percent come from the Midwest and 2 percent from the Far West. Foreign students usually make up about 3 percent of the entering class. One-third of the students are women. Ages of all students have ranged from twenty to fifty-two, although the majority are twenty-five and under.

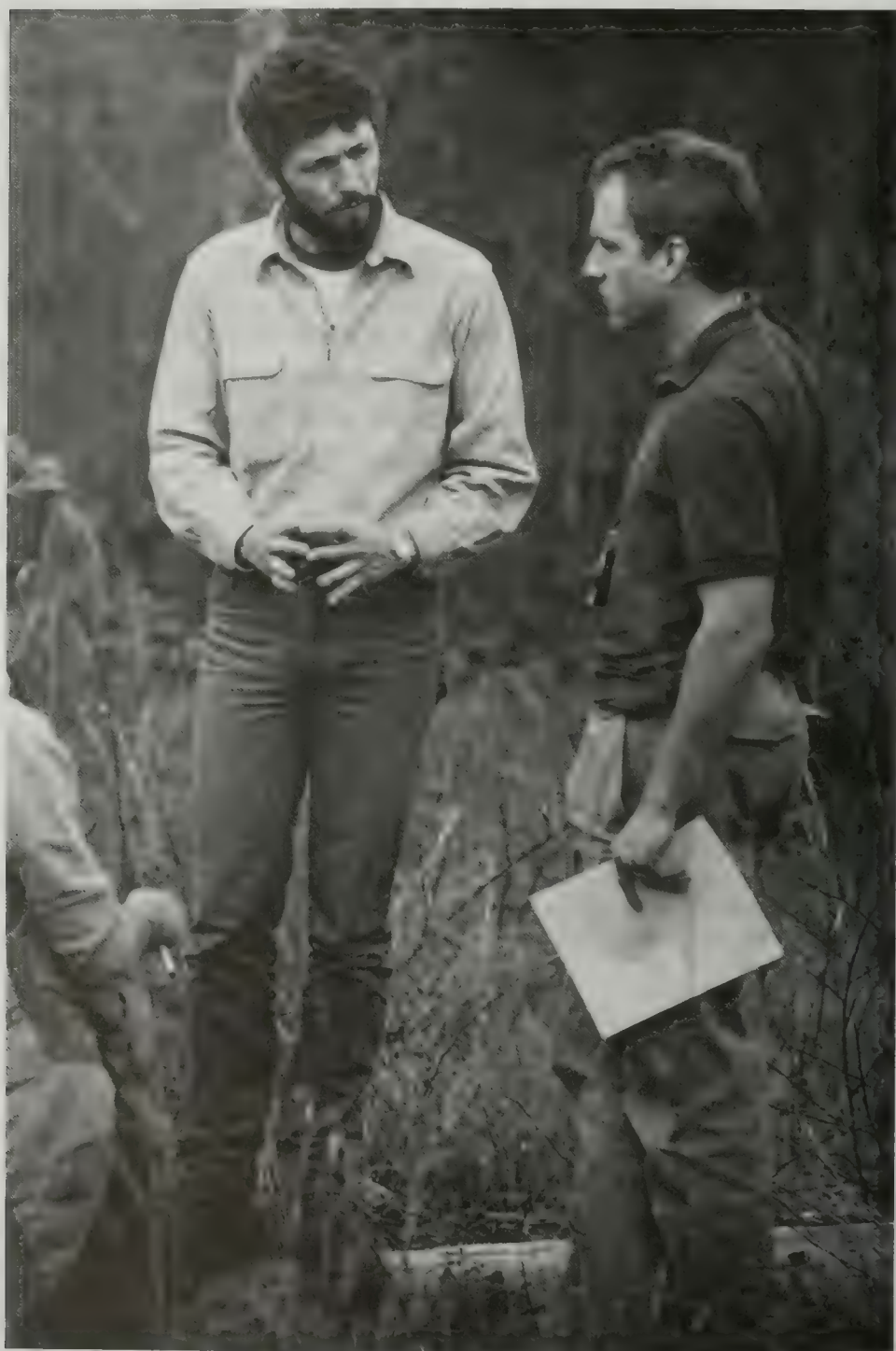
Educational backgrounds of the professional students are equally varied. On the average, the majority (54 percent) have undergraduate majors in the natural sciences. A smaller number (19 percent) have majors in either forestry, environmental science or earth science. Approximately 5 percent majored in the social sciences and 6 percent in the humanities. An additional 9 percent have dual majors and 6 percent have advanced degrees.

Publications

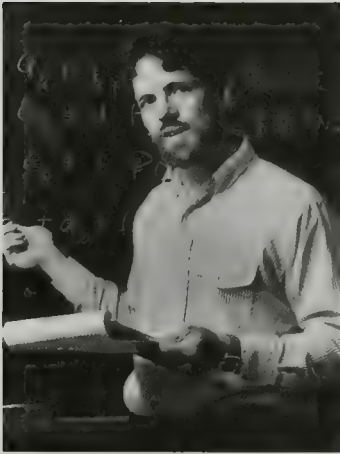
The Office of Resource and Environmental Publications serves as the center for publications issued by the School of Forestry and Environmental Studies. *FOREM* (an acronym for forestry and environmental management) is a news magazine that reflects all aspects of the school's current activities and achievements, with an emphasis on research. Published twice a year, it is mailed to alumni of the school and to other individuals and organizations throughout the United States upon request. Other regular publications include announcements of intensive courses, conferences, and special programs; and a student resume book. Technical bulletins and conference proceedings are published as part of a continuing series.

The office is under the direction of a publications specialist. Assistantships are offered to students who have photographic, journalistic, or artistic skills.

The Faculty



Resident Faculty



Ralph J. Alig, Ph.D., *Adjunct Assistant Professor; B.S., Forest Production and Wood Technology, Purdue University; M.S., Forest Economics, University of Missouri; Ph.D., Forest Economics, Oregon State University.*

An economist with the USDA Forest Service, Dr. Alig is interested in determinants of area changes for major land uses and forest cover types, methods for projecting associated area changes on a regional scale, and economic returns of forestland management alternatives. These are closely related areas of investigation that require consideration of the economics of land use and forestland management, landowner investment behavior and response to market and non-market incentives, and ecological processes of forest development and cover changes. Findings from the research pertaining to land use change, forestland

management, and owner behavior provide a basis for developing long-range projection models that support forecasting of timber and other natural resource supplies at regional and national levels. A recent advance is the development of a model for the southern United States. This system has greatly improved the capability to systematically examine the impacts of land use and cover type changes on timber, range, wildlife, and water resources.

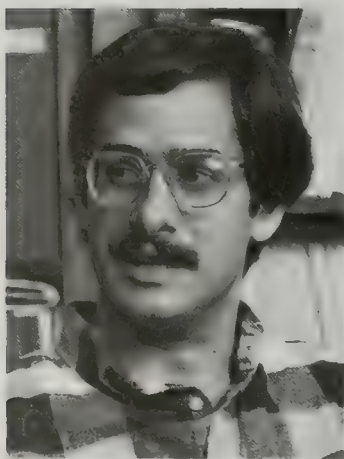
Future work will include examination of the relationship between international land use changes and forest area changes in the South as well as other regions of the United States. Dr. Alig also will be involved in the development and application of quantitative techniques for projecting forest type transitions in northern forest ecosystems, analysis of forest investment behavior in relation to government programs such as the Conservation Reserve Program of the 1985 Farm Bill, examination of the importance of risk in land use and management decisions by private landowners, and forest development on abandoned or idle crop and pasture land.



Alexander T. Davison, M.F., *Adjunct Assistant Professor*; B.S., Botany, M.F., Forest Entomology, Duke University.

Because his primary activity is consulting in forest land management, Professor Davison's research interests are in those areas that have application to that field. One of his primary interests is the use of aerial photographic interpretation to trace land use history, to facilitate forest management, such as in laying out harvesting roads in western North Carolina, and to increase the efficiency of forest inventory. Further interests lie in small, private timberland ownerships, particularly in problems involving the enhancement of forestry and wildlife management.

For the past several years, Professor Davison has been involved in the establishment and use of the state park network, and has conducted a land use study of the area surrounding one of the North Carolina's scenic rivers.



Richard T. Di Giulio, Ph.D., *Assistant Professor*; B.A., University of Texas; M.S., Wildlife Management, Louisiana State University; Ph.D., Wildlife Biology, Virginia Polytechnic Institute and State University.

Dr. Di Giulio's research group in ecotoxicology is most concerned with biochemical responses of lower vertebrates to environmental contaminants. A key focus involves the application of oxygen toxicity theory to the development of a sensitive methodology for detecting sublethal stress in aquatic animals, particularly fish, exposed to complex effluents or contaminated sediments. The underlying idea here is that a great number of important contaminants representing a variety of chemical structures are toxic at least in part due to their ability to generate free radical intermediates, including oxygen radicals. The group is

also employing this approach to explore the biochemical mechanisms underlying the effects of air pollutants on forest vegetation.

In a related vein, Dr. Di Giulio is examining the mechanism of paraquat-induced teratogenesis in avian embryos. Additionally, he is performing collaborative research examining the comparative neurotoxicology of several insecticides in aquatic organisms, both vertebrates and invertebrates. Another area of research involves the study of trace metal dynamics in wetland ecosystems, particularly waterfowl food chains.

In summary, Dr. Di Giulio's research interests are in basic research relative to the entire field described as ecotoxicology. He believes that an important obstacle to solving ecotoxicological problems is the inadequacy of information concerning basic responses of lower organisms to contaminants and realistic contaminant mixtures. He is interested in supplying some of the needed information.

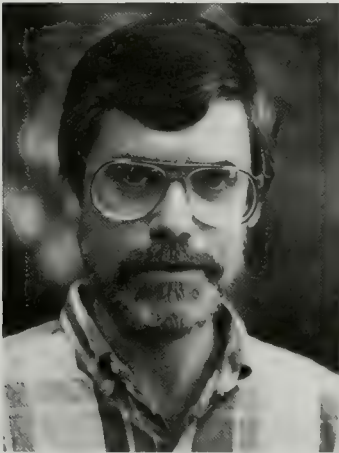


George F. Dutrow, Ph.D., *Professor; B.S., General Science, M.F., Wood Technology, Ph.D., Forest Economics, Duke University.*

Dr. Dutrow's research interests are directed toward three main areas: (1) economic opportunities to increase national timber supplies, (2) economic efficiency of private and public programs of forestry assistance, and (3) economic consequences of risk and uncertainty in forestry. These research areas are being addressed cooperatively with scientists from industry, government, and other universities.

His personal research and research leadership are concentrated in two areas. First, he is engaged in addressing nationwide economic opportunities to increase forest productivity to meet national timber supply goals. This research assists government lead-

ers and corporate executives to formulate effective policies and programs for United States forest resources. Second, he is involved in selecting and directing a team of research economists to define private forestry enterprises in Latin America, Africa, and Asia. The purpose of this effort is to determine how forestry enterprises can be established in developing countries, become viable, and compete in world markets.

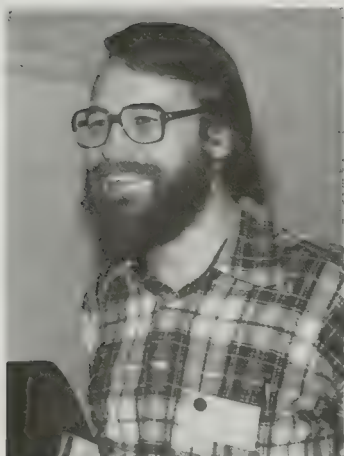


Robert G. Healy, Ph.D., *Adjunct Associate Professor; B.A., Economics and English, M.A., Ph.D., Economics, University of California, Berkeley.*

A senior associate with The Conservation Foundation/World Wildlife Fund in Washington, D.C., Dr. Healy conducts and manages research on natural resource and environmental policy. Past research has resulted in books on state land use planning, coastal zone management in California, national forest policy, and resource and environmental problems of United States agriculture. He recently completed a major study of land use competition in the U.S. South that considered demand and technology patterns in agriculture, forestry, cattle grazing and urbanization, and evaluated impacts on "unpriced" environmental values. He has a continuing interest in land use policy

in fast-growing areas, including the South.

Dr. Healy's other research is increasingly concerned with reconciling Third World development with sustainable use of natural resources and maintenance of environmental quality. He has participated in preparation of a state-of-the-environment report for Mexico and is writing an overview of conservation problems in Latin America. In 1987-88 he directed a year-long seminar in natural resource policy for government officials, offered through the Duke University Center for International Development Research. In the School of Forestry and Environmental Studies, he teaches courses in land use policy and international environmental management.



William F. Hyde, Ph.D., *Associate Professor*; A.B., International Relations, American University; M.A., Economics, M.S., Natural Resources, Ph.D., Resource Economics, University of Michigan.

Dr. Hyde's research interests are in applied economics and policy analysis. His work is empirical and quantitative. His most recent book examined both the net benefits and the distributive effects of various public regulations impacting private forest management. These include state forest practice acts, forest incentive payments, import-export restrictions, special tax provisions and endangered species protection. His previous work has focused on public land management, including timber supply and wilderness protection.

Dr. Hyde is currently working on two projects. In the first, he and two colleagues are measuring the benefits and costs of research in forestry, both biological research (as in genetics or insect and disease control) and utilization research (as for improved plywood production). His second project concerns forestry and economic development. Dr. Hyde recently spent a year in Thailand with an Asia-wide social science research project. While there, he and his Asian colleagues began a series of studies that measure the gains to local populations from social forestry projects and that review the impacts of various land tenure arrangements for small landowners.

He is currently on leave.



Kenneth R. Knoerr, Ph.D., *Professor*; B.S.F., Forestry, University of Idaho; M.F., Forestry, Ph.D., Yale University.

Dr. Knoerr's research emphasizes investigations of the processes by which plants interact with the atmosphere. This research is approached from two perspectives. The first is the development of physical models for the plant-environment interaction. The second, in parallel with the modeling, is an extensive experimental effort to collect data on the gradients of radiation, wind, temperature, humidity, carbon dioxide and other environmental parameters that characterize the microclimate of forests and other vegetation.

His research group is involved in an intensive study to measure and model the characteristics of air flow within the forest. These models will increase the understanding of the turbulent exchange of gases between forest vegetation and the atmosphere, the diffusion patterns of disease spores and pollen within the forest, and the mechanisms by which forests remove aerosols from the atmosphere.

Dr. Knoerr and his associates are also studying wet and dry deposition of sulfate, nitrate, and other pollutants from the atmosphere. His research group is developing improved measurement techniques which are important both to improve estimates of total acid deposition and to evaluate the effects of this deposition on vegetation.



Douglas A. MacKinnon, M.F., *Professor of the Practice of Forestry*; B.S., Industrial Administration, M.F., Industrial Forestry, Yale University.

Professor MacKinnon is the project administrator of the Forestry Private Enterprise Initiative, a cooperative research and demonstration project sponsored by the Agency for International Development, which provides technical assistance to the forest-based private enterprise sector of developing economies. A graduate of the Stanford University Executive Program, he spent fifteen years with several firms in the forest products industry, holding various positions in manufacturing, land management, long-range planning and capital budgeting. For eight years he was a member of the faculty at the University of Michigan, School of Forest Resources, and was chairman of the forest resources program during his last five years there. He has been active as a consultant and is author of numerous reports and articles. The most recent of these deal with the fundamentals of capital investments, analysis of managerial systems, and timber sales accounting systems.

In addition to teaching courses in the business aspects of natural resources, Professor MacKinnon is responsible for organizing the Laird, Norton Distinguished Visitor Series each spring and a field trip to the western United States in early May. His research interests include planning, managerial decision making and control in both the public and private sectors.



Lynn A. Maguire, Ph.D., *Assistant Professor*; A.B., Biology, Harvard University; M.S., Resource Ecology, University of Michigan; Ph.D., Ecology, Utah State University.

The major area of Dr. Maguire's current research is the application of formal techniques for decision making under uncertainty and population modeling to the management of endangered species. Decision analysis provides a framework for integrating scientific information from ecological theory, stochastic population models, and empirical studies with economic and public policy considerations affecting the management of endangered species populations. Dr. Maguire and her students have used these methods to examine wild and captive management strategies for species such as grizzly bears, black-footed ferrets, Sumatran and Javan rhinos, tigers, and red-cockaded woodpeckers.

Another area of her current research is the application of forest dynamics models to predict the impact of air pollutants on tree growth and mortality, and their eventual impact on forest composition and productivity.

Beyond these specific research projects, Dr. Maguire is interested in (1) the application of population dynamics, population genetics and ecological theory to the conservation of animal and plant populations; (2) the processes of competition and succession in managed and unmanaged forests; and (3) the use of quantitative methods, including statistics, decision analysis, and mathematical modeling, to integrate scientific information in resource management.



Carlos M. Marin, Ph.D., *Assistant Professor; B.S., Civil Engineering, M.S., Environmental Science and Engineering, Rice University; S.M., Ph.D., Environmental Science and Engineering, Harvard University.*

Dr. Marin's research interests lie in the water resource planning and management area, with particular emphasis on the role of prediction uncertainty in decision making. His current projects include (1) determination of optimal capacity expansion of water facilities under uncertainty, with a focus on the development of alternative pricing schemes; (2) contrasting the accuracy of short-term forecasts of water supply reliability with "black box" versus conceptually based models; (3) development of a decision analytic procedure for the management of hazardous waste sites; (4) mesoscale water resource assessment

models in developing countries; and (5) development and testing of empirical Bayes procedures.

His future plans include projects to develop Bayes and empirical Bayes methods for parameter estimation in nonlinear, simultaneous equation, quantity/quality models. He is also interested in the use of spatial equilibrium models for evaluating interregional water trading rules, and the formulation of a sequential decision framework for the permitting of hazardous waste sites.



Ram Oren, Ph.D., *Assistant Professor; B.S., Forest Resource Management, Humboldt State University; M.S., Ph.D., Forest Ecology, Oregon State University.*

Dr. Oren's current research focuses on the interaction between individual trees and the stand in both the below- and above-ground compartments. He is studying the means by which the physical environment and competition affect the availability of light, water, and nutrients and, thus, the production of carbohydrates; and the allocation of carbohydrates under different limiting conditions to the growth of roots, stem, and crown. In the above-ground compartment, he is interested in canopy leaf area development in relation to tree growth and mortality, and wood production. His research seeks to identify key variables that indicate canopy competition and tree

vigor, and can be used to separate normal stand dynamics from environmental stresses (such as drought or acid precipitation) in order to understand and predict effects on growth.

In more general terms, Dr. Oren is interested in using principles of plant physiology to explain whole-plant ecological phenomena, such as tree and stand vigor and their responses to acute perturbations or low-level continuous stresses. He leads the ecophysiology portion of an acid rain research project at the University of Bayreuth, Federal Republic of Germany, and is directly responsible for the growth and nutrient analyses of Norway spruce at different stages of decline. His future plans include agroforestry research, matching the development of the tree canopy to the photosynthesis of crops raised below.



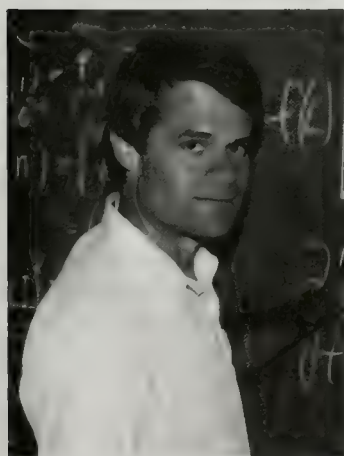
Peter J. Parks, Ph.D., *Assistant Professor; B.S., Forest Management, Oregon State University; M.S., Forest Economics, Ph.D., Resource Economics, University of California, Berkeley.*

Dr. Parks's research interests are in the application of microeconomic theory and econometrics to natural resource problems. Recent projects concern biometric and econometric modeling of forest resource supplies. Much of this has been for the USDA Forest Service to aid in national resource supply assessments and policy formulation. Several of the studies examine allocation of land to resource production in different areas of the United States. Two projects to be completed in the future involve the use of land area models in resource policy analysis.

The first is a study of land allocation in the southeastern United States designed to quantify the

effect of uncertainty in predicting returns to alternative uses of land and to compare the influence of uncertainty with that of economic or demographic factors. The second is a study of agricultural and forest land use interactions to estimate the amount of land potentially available for forest uses under different economic conditions and to incorporate these estimates into forest resource supply projections.

Plans include analyses of both American and Canadian land use trends and opportunities. Dr. Parks will administer annual workshops for land area researchers in the United States and Canada. These will foster international and interdisciplinary modeling efforts, and provide opportunities for learning new techniques and applications.



Kenneth H. Reckhow, Ph.D., *Associate Professor; B.S., Engineering Physics, Cornell University; M.S., Ph.D., Environmental Science and Engineering, Harvard University.*

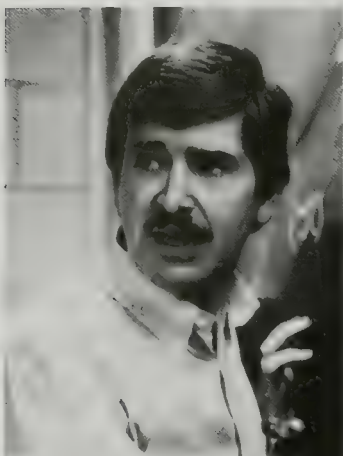
Dr. Reckhow's research activities have focused on the development, evaluation, and application of models for the management of water quality. In particular, he is interested in the effect of uncertainty on model specification, parameter estimation, and model applications. Recent work has expanded this theme to consider the effect of scientific uncertainties on water quality decision making.

Among the problems that Dr. Reckhow's research group has examined are lake eutrophication, toxic substances, and acid rain. Past work on eutrophication has centered on the development and evaluation

of empirical models, estimation of prediction uncertainty using first order error analysis and Monte Carlo simulation, and a decision analytic approach to lake management. Work soon to be initiated will be concerned with errors-in-variables and parameter identification in mechanistic models.

A past major research activity was the development of a decision (risk) analytic framework for the management of toxic substances in aquatic systems. Dr. Reckhow and his associates applied the framework to the problem of PCB management in the Lake Michigan watershed. This effort included work on a simulation model, uncertainty analysis and multiattribute utility theory.

Dr. Reckhow and his students have been working on an empirical model for the prediction of the probability of fish absence as a function of acid rain chemistry in United States lakes. This is part of a comprehensive effort to model the emissions, transport, and effects of acid rain for the purpose of policy evaluation at the national level.

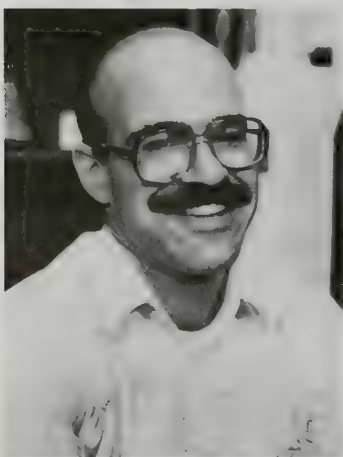


Curtis J. Richardson, Ph.D., *Associate Professor*; B.S., Biology, State University of New York at Cortland; Ph.D., Ecology, University of Tennessee.

Dr. Richardson's research interests in applied ecology center on long-term ecosystem response to large scale perturbations such as acid rain, toxic materials, flooding, or nutrient additions. He has specific interests in such internal ecosystem processes as primary productivity and phosphorus nutrient dynamics, and the effects of environmental stress on plant metabolism and growth. Major research just completed focused on wetlands as nutrient sinks. The central hypothesis being tested was that wetlands ecosystems function as nutrient traps and this reduces downstream eutrophication in lakes and streams. Radioactive phosphorus was used to deter-

mine the rates of movement, storage, uptake and losses for this limiting nutrient.

His current research activities include: (1) the development of bioassay techniques to predict the potential stress effects of acid rain and ozone on spruce, fir, and loblolly pine physiology; (2) heavy metal, sorption storage and removal from drained pocosin peatlands; (3) wetland development trends in the southeastern United States; (4) aluminum toxicity and plant growth in bauxite residues; and (5) analysis of nutrient and hydrologic flux in coastal ecosystems.



Daniel D. Richter, Ph.D., *Associate Professor*; B.A., Philosophy, Lehigh University; Ph.D., Forest Soils, Duke University.

Dr. Richter's research uses principles of soil science to help explain and resolve forest, land and water resource problems. His work is directed mainly at quantifying nutrient cycling processes that control forest ecosystem productivity and drainage water chemistry, and at effects of regional air pollution on forest resources. Current research projects have three objectives: to quantify cation exchange reactions among nutrient cations and aluminum in acidic forested soils, to evaluate interactive effects of soil moisture and nitrogen availability on forest productivity, and to determine effects of land-use practices on soil fertility and water quality.

These ecological studies include laboratory, field and greenhouse experiments. Cation exchange studies are evaluating effects of atmospheric deposition on soil and drainage water chemistry. Soil moisture's control over nitrogen mineralization is being studied in a moisture-fertility gradient of oak-hickory forests. Greenhouse studies evaluate interactive effects of nitrogen and water on pine seedling growth.

Dr. Richter also has long-term interests in studying the effects of land use on soil properties and water quality. His past work used the small experimental watershed approach to test effects of forest management practices on nutrient cycling and water quality. Several current projects are based in Central America.



William J. Stambaugh, Ph.D., *Professor; B.S., Forestry, M.S., Forestry, Pennsylvania State University; Ph.D., Forest Pathology, Yale University.*

Dr. Stambaugh's research focuses on (1) the ecology of soil microorganisms with emphasis on mycorrhizae and root diseases of trees, (2) identification and evaluation of biocontrol systems in forest disease management, and (3) epidemiological analysis of forest pest management systems.

Soil microbiology is characterized by a rapidly expanding literature base. Dr. Stambaugh's course in microbiology of forest soils, therefore, is research oriented to insure periodic updating of topics that bear on rhizosphere interactions. This has helped generate a number of graduate dissertations dealing with mycorrhizal biology and the infection process of specific root-decaying fungi.

Tree root diseases have also been examined with regards to the biocontrol potential of saprophytic competitors for rootwood substrate and endomycorrhizal protection of nursery-grown hardwoods against root rot. Most recently, he has evaluated the above-ground system of hypovirulence in the chestnut blight fungus as a biocontrol mechanism for chestnut sprout survival.

The population dynamics of forest pests, primarily fungi and insects, is recognized as the key to development of an integrated approach to forest pest management. Dr. Stambaugh's course on this subject helps to identify research needs in this context with the potential for implementing analysis of multi-pest systems on the Duke Forest. The ultimate goal of this work is to attain predictive accuracy in identifying pest hazard situations on an operational planning basis.

Nonresident Faculty

William R. Bentley, Ph.D., *Adjunct Professor*; B.S., Forestry, University of California, Berkeley; M.F., Forest Economics and Management, University of Michigan; Ph.D., Agricultural Economics, University of California, Berkeley.

Dr. Bentley's current research interests are in agroforestry methodology and design, social forestry economics and policy, and timber supply and demand. He is senior program officer with Winrock International Institute for Agricultural Development.

Stephen G. Boyce, Ph.D., *Adjunct Professor*; B.S., M.S., Forestry, Ph.D., Plant Ecology, North Carolina State University.

Dr. Boyce's current research interests are timber production in relation to all forest benefits, and ecosystem dynamics and silviculture to provide forest benefits in the context of social, economic, and political forces. Chief ecologist, retired, with the USDA Forest Service Southeastern Forest Experiment Station, he has pioneered in the development and application of systems approaches to forest planning, management, and research.

Norman L. Christensen, Jr., Ph.D., *Associate Professor*; B.A., M.A., Biology, California State University, Fresno; Ph.D., Biology, University of California, Santa Barbara.

Dr. Christensen's current research interests are the effects of disturbance on the structure, function, and development of plant populations and communities, in particular, patterns of forest development following cropland abandonment as these are affected by environment, stand history, and patterns of seed rain. His research on the southeastern coastal plain is focused on a comparative study of biogeochemical and community responses to varying fire regimes. Dr. Christensen is a professor in the Duke University botany department.

William K. Condrell, J.D., *Adjunct Professor*; B.S., Industrial Economics, Yale University; S.M., Business and Engineering Administration, Massachusetts Institute of Technology; J.D., Harvard University.

Professor Condrell's major research interest centers on factors affecting forest investment, including the income, estate and gift, and property taxation of timber. He has specialized in work with tax systems which maximize timber growth, investment, and effective forest utilization from the viewpoint of both the national interest and timber ownerships of all sizes. At present, he is a partner in Steptoe and Johnson, attorneys, in Washington, D.C.

Michael P. Dieter, Ph.D., *Adjunct Professor*; B.S., University of Notre Dame; M.A., Ph.D., Zoology, University of Missouri.

Dr. Dieter is a physiologist with the National Toxicology Program of the National Institute of Environmental Health Sciences. His research interests lie in the area of environmental toxicology of metals, mammalian toxicology and carcinogenesis, and cellular biochemistry and physiology.

Milton S. Heath, Jr., J.D., *Adjunct Professor*; A.B., Harvard University; LL.B., J.D., Columbia University.

Dr. Heath specializes in environmental and natural resource law and administration, and the legislative and other governmental aspects of resource development. He is a member of the Institute of Government faculty at the University of North Carolina at Chapel Hill.

Benjamin A. Jayne, Ph.D., *Professor*; B.S.F., University of Idaho; M.F., Ph.D., Forestry, Yale University.

Dr. Jayne's research interests are in the application of mathematical models and biophysical theory to a wide range of problems in forest resources. Much of his past

research emphasized wood and fiber composite systems, and his most recent book dealt with the mechanics of wood and wood composites. In the past few years, however, he has turned his attention to a broader scope of forest resources, in particular, management and harvesting strategies.

William R. Sizemore, Ph.D., *Adjunct Professor*; B.S., Forestry, Louisiana State University; M.F., Duke University; Ph.D., Forestry, University of Georgia.

Dr. Sizemore is a principal in Sizemore and Sizemore, Inc., a consulting firm in Tallassee, Alabama, offering forest appraisal, analysis, and management services. His current research interests concern the impact of all types of taxes on forest landowners, industrial and nonindustrial. In the field of federal taxation, the combined effects of income and estate taxation are of special interest. He also has helped develop management information systems for forest operations.

Harold Karl Steen, Ph.D., *Adjunct Professor*; B.S., Forestry, M.F., Ph.D., History of Conservation, University of Washington.

Dr. Steen's current research interests are the political and economic development of modern forestry concepts and policies, and the history of conservation and land use as related to current forest land issues. He is director of the Forest History Society at Duke University.

P. Aarne Vesilind, Ph.D., *Professor*; B.S., M.S., Civil Engineering, Lehigh University; M.S., Sanitary Engineering, Ph.D., Engineering, University of North Carolina at Chapel Hill.

A professor in Duke University's School of Engineering, Dr. Vesilind is interested in research concerning wastewater and sludge management and disposal, and the development of solutions to solid waste and resource recovery problems.

Visiting Instructors

William H. Banzhaf, B.S.F., University of Michigan; *George Banzhaf and Company, Forest Management Consultants*

Steven C. Chapra, Ph.D., University of Michigan; *University of Colorado*

Gordon Davidson, M.E.M., Duke University; *International Technology Corporation*

Mahlon Easterling, M.S., Columbia University; *Engineering Consultant, Durham, North Carolina*

Theodore Howard, Ph.D., Oregon State University; *Department of Forest Resources, University of New Hampshire*

George H. Mason, M.F., Duke University; *The Travelers Insurance Companies*

Clark Row, Ph.D., Tulane University; *Institute for Forest Analysis, Planning and Policy*

William E. Wilkerson, Ph.D., University of North Carolina at Chapel Hill; *Biometry and Informatics Division, Duke University Medical Center*

J. Michael Vasievich, Ph.D., Duke University; *USDA Forest Service*

Faculty Emeriti

Roger F. Anderson, Ph.D., *Professor Emeritus*

Leon Edward Chaiken, M.F., *Professor Emeritus*

Paul Jackson Kramer, Ph.D., *James B. Duke Professor Emeritus*

James Granville Osborne, B.S., *Professor Emeritus*

James G. Yoho, Ph.D., *Professor Emeritus*

Degrees



Degrees

Duke University offers professional and research degree programs in forestry and environmental studies. Study can be pursued for a Master of Forestry (M.F.) or Master of Environmental Management (M.E.M.) degree in the School of Forestry and Environmental Studies, or for a Master of Science, Master of Arts, or Ph.D. degree in the Department of Forestry and Environmental Studies of the Graduate School.

The degrees offered through the School of Forestry and Environmental Studies (M.F. and M.E.M.) are professional degrees. They are intended mainly to provide students with the education and experience for careers in resource management.

The Master of Forestry degree concentrates on forest and associated resources, including woodlands, water, wildlife, and recreation, and their management from an ecological and economic point of view. The graduate with an M.F. degree is qualified for employment as a professional forester in an administrative, staff, or field position with federal or state agencies, forest industries, and other organizations concerned with forest and land management. The M.E.M. considers natural resources in a broader context. The basic objective of this degree is to develop expertise in planning and administering the management of the natural environment for maximum human benefits with minimum deterioration of ecosystem stability.

The Forest Resource Management program is offered under the M.F. degree. The remaining three programs of study—Resource Ecology, Water and Air Resources, and Resource Economics and Policy—are offered under the M.E.M. degree. In addition, students have the option of designing an individually structured program of study under either degree, with the approval of the faculty council.

Students planning careers primarily in teaching and research are urged to follow a course of study in the Graduate School. The Graduate School degrees (M.S., A.M., Ph.D.) are appropriate for the student who wishes to concentrate on a particular area of research in resource science, systems science, or policy.

Requirements for the Professional Degrees

A total of 48 units is required for either the Master of Forestry (M.F.) or the Master of Environmental Management (M.E.M.) degree. Although a student may fulfill part of the degree requirements through an internship or independent study off campus, he or she must complete at least 24 units and two semesters in residence.

Students' programs consist of a combination of regular courses, independent projects, and seminars. A master's project of 4 to 6 units is required of all students. Course work in other departments of the University and at nearby institutions is available to strengthen students' education in special areas.

A full semester load is 12 units, which should ordinarily consist of a combination of regular courses, independent projects, and the master's project. Not more than four regular courses should be taken in a semester. Permission of the dean is required to take more than 15 or fewer than 9 units in a semester.

As students progress in their programs, they are expected to devote an increasing amount of time to the master's project and to register for more independent project units in a semester. Thus, the student should plan to take fewer units of regular courses during the latter semesters of study.

REDUCTION IN DEGREE REQUIREMENTS

Students who have an undergraduate degree in forestry or environmental studies may earn either a Master of Forestry or Master of Environmental Management degree with only 30 units of credit. To be admitted to the one-year degree option, the student must have received either a Bachelor of Science in Forestry degree from an accredited forestry school (for M.F. candidates) or an environmental studies degree from an approved curriculum in environmental science or environmental engineering, as judged by the faculty of the student's proposed program of study for the M.E.M. degree. In evaluating the student's credentials for admission with a reduction in credit requirements, special consideration will be given to professional experience. The student must spend a minimum of two semesters in residence. However, students who qualify for admission through the Senior Professional Program, described in a separate chapter in this bulletin, may reduce the residence requirement.

CONCURRENT DEGREES

Students desiring to earn both an M.F. and an M.E.M. degree can do so by planning their courses appropriately. The requirements for earning both degrees are as follows:

1. The student must qualify for either an M.F. or M.E.M. degree by earning 48 units of credit under the requirements set forth above.
2. For the second degree, the student must complete an additional 24 units of study composed of courses which would normally be accepted toward the second degree. Two semesters in residence are required.

Determination of eligibility for the degrees will be made on an individual basis and will consider the educational background and objectives of the student.

Master of Business Administration. The techniques of management science are applied with increasing frequency in the management of natural resources, and they are also now commonly used in the analysis of environmental problems. To integrate training in these management techniques more effectively into the curriculum, the School of Forestry and Environmental Studies has developed a cooperative arrangement with Duke's Fuqua School of Business. Three years of study are required to earn the combined degrees of Master of Forestry/Master of Business Administration or Master of Environmental Management/Master of Business Administration. Degree requirements in the School of Forestry and Environmental Studies are determined by the faculty council. Normally at least 36 units of credit within the school are required to receive the M.F. or M.E.M. degree. A typical program sequence would involve spending the first year in the School of Forestry and Environmental Studies followed by a year in the Fuqua School of Business and concluding with the final year in either school with elective work in the other.



These concurrent degrees stress concepts, analytical reasoning, and the basic methodologies of management science, while providing the student with a knowledge of current problems in the natural resource industries. Managerial economics, resource economics, organization theory and management, accounting, information and control, resource management, the legal environment, and public policy aspects of resource industries form a substantial component of each degree.

Because of the academic demands of these degrees, those entering without the necessary analytical skills or life science background may be required to take additional work beyond that specified.

Students who wish to undertake both the Master of Forestry or Master of Environmental Management and Master of Business Administration degrees must apply to and be accepted by each of the respective schools. For information on the Master of Business Administration degree, the prospective student should write to the Fuqua School of Business, Admissions Office, Duke University, Durham, North Carolina 27706.

Master of Arts in Public Policy Sciences. As issues concerning natural resources and the environment have become of increasing significance to the nation, there has developed a corresponding need for well-trained policy analysts who can provide timely and appropriate information and analysis to resource policy makers. To meet this need a unique concurrent degree has been developed in cooperation with the Institute of Policy Sciences and Public Affairs. Students pursue a Master of Forestry or Master of Environmental Management degree and a Master of Arts degree in public policy sciences. Doctoral candidates in forestry and environmental studies are also eligible to undertake the Master of Arts in public policy sciences.

The concurrent degree normally takes two and one-half years to complete. The first year is devoted to study in the School of Forestry and Environmental Studies, and the second year is spent in the Institute of Policy Sciences and Public Affairs. The final semester involves work in both areas. Degree requirements in the School of Forestry and Environmental Studies are determined by the faculty council. Normally, at least 36 units of credit within the school are required to receive the M.F. or M.E.M. degree. A summer internship with a resource or environmental agency, or with a related legislative, judicial, or interest group, is required for the policy degree.

This degree provides training in the politics and economics of resource and environmental policy making. Emphasis is placed on understanding the social and political forces involved, developing facility with quantitative and logical methods of forecasting, and evaluating policy consequences. Knowledge of the uses and limitations of policy analysis, and an awareness of the ethical dimensions of policy choice are also stressed.

Students must apply to and be accepted by both the School of Forestry and Environmental Studies and the institute. For detailed information on the policy sciences degree, write to Director of Graduate Studies, Institute of Policy Sciences and Public Affairs, Duke University, Durham, North Carolina 27706.

Other Concurrent Degrees. With the special permission of the faculty council and the dean of the School of Forestry and Environmental Studies, students are permitted, on an individual basis, to establish concurrent degree programs with certified graduate degree programs either within or outside of Duke University. In the past, students have designed such programs with law schools, business schools, and graduate engineering programs. As with the other concurrent degrees, the student must be enrolled in the Master of Forestry or Master of Environmental Management degree program for 36 units of credit and in residence for at least one full year.

To gain acceptance of a specially designed concurrent degree, the student must show an official acceptance from another certified graduate degree program. In order to receive the M.F. or M.E.M. degree, the student must have completed 36 units of credit, the master's project, all program area requirements, and at least one full year of study in the

other degree program (with an official transcript of work completed). For additional information concerning special concurrent degrees, applicants should consult the Director of Admissions.

Degrees in the Graduate School

In addition to the professional degrees (M.F. and M.E.M.) described earlier, Duke University offers the Master of Arts (A.M.), Master of Science (M.S.), and Doctor of Philosophy (Ph.D.) degrees in appropriate areas of forestry and environmental studies. These degrees are administered by the Graduate School of the University; however, the bulk of the instruction, research, and advising connected with them takes place in the School of Forestry and Environmental Studies. For administrative purposes, qualified faculty members of the School of Forestry and Environmental Studies comprise the faculty of the Department of Forestry and Environmental Studies of the Graduate School.

Degrees in the Graduate School are appropriate for students desiring to concentrate their study and research within a well-defined area of forestry or environmental studies. Students usually pursue fewer and more advanced topics to a greater depth than do students in professional degree programs. Thus, study in the Graduate School is more appropriate for students preparing for careers in teaching or research in specialized areas, while the broader approach characterizing professional education is more appropriate for students preferring careers in resource management.

Graduate School students emphasize research as major parts of their degree programs. An active research program is a vital component of the School of Forestry and Environmental Studies, and most of the research projects in the school utilize graduate students as research assistants.

Qualification of Students. Students seeking admission to the Graduate School must have received an A.B. or B.S. degree (or the equivalent in the case of foreign students) from an accredited institution. Usually the student should have majored in the area of intended graduate study or one closely related to it. Some work in science and mathematics is essential; however, the total undergraduate education should be well-rounded. Because research is such an integral part of graduate education and of the school's mission, the student's undergraduate record must evidence the capability and motivation to carry out independent study and research at an advanced level.

Policy and Procedures. Policy and procedures for admission, general requirements for degrees, registration, and academic regulations are given in detail in the bulletin of the Graduate School and are not repeated here. In general, procedures, requirements, and regulations are similar in the Graduate School and in the School of Forestry and Environmental Studies. Some differences are noted below.

Admission. Applications for admission to A.M., M.S., and Ph.D. degree programs in forestry and environmental studies should be obtained from and returned to the dean of the Graduate School, Duke University, Durham, North Carolina 27706. However, inquiries about programs of study and research should be sent to the director of graduate studies, School of Forestry and Environmental Studies. On request, the director of graduate studies will arrange to have application materials sent to the applicant.

All applicants for degrees in the Graduate School will have their files screened by the faculty of the Department of Forestry and Environmental Studies of the Graduate School. One of the faculty members must accept responsibility for advising the applicant before admission can be offered.

GENERAL REQUIREMENTS FOR THE MASTER'S DEGREES

Residence Requirements. Candidates for A.M. or M.S. degrees must spend, as a minimum, one full academic year (two successive semesters), or its equivalent in summer sessions, in residence at Duke University. Thirty units of graduate credit constitute

minimum enrollment for a master's degree. Additional time to complete course and research requirements is frequently necessary.

Transfer of Graduate Credits. A maximum of 6 units of credit may be transferred for graduate courses completed at other institutions. Consult the bulletin of the Graduate School for details.

The Thesis. A thesis is required of M.S. degree candidates but is optional for A.M. candidates. The thesis must indicate the student's ability to collect, arrange, interpret, and report pertinent material on a research problem. Although a publishable document is not required, the thesis must be written in an acceptable style and should exhibit the student's competence in scholarly procedures.

The Examining Committee and the Examination. The faculty member who directs the student's program recommends an examining committee composed of himself and two other members of the graduate faculty, one of whom usually must be from a department other than forestry and environmental studies. The committee conducts an examination based on the student's general program and the thesis.

Language Requirements. There is no language requirement for A.M. or M.S. degree candidates in the Department of Forestry and Environmental Studies.

Major and Related Subjects. The student must present acceptable grades for a minimum of 24 units in graduate courses. Of these, at least 12 units must be in the Department of Forestry and Environmental Studies. A minimum of 6 units must be in a minor subject or in related fields approved by the department and by the dean of the Graduate School. A maximum of 6 units may be earned by submission of an approved thesis.

GENERAL REQUIREMENTS FOR THE DOCTOR OF PHILOSOPHY DEGREE

The Ph.D. is a research degree. Although course work is a necessary part of the student's program, the mere accumulation of course credits will not be sufficient for receiving the doctorate. The granting of the Ph.D. is based primarily upon the student's knowledge of a specialized field of study and upon the production of an acceptable dissertation embodying the results of original research.

Requirements. The formal requirements for the Ph.D. degree are as follows: (1) major and related courses, (2) foreign language, (3) a supervisory committee for program of study, (4) residence, (5) preliminary examination, (6) dissertation, and (7) final examination. In order to be considered for candidacy for the Ph.D. degree, the student must have passing grades in all courses.

Major and Related Courses. The student's program of study demands substantial concentration on courses in the department. However, a minimum of 6 units in a related field approved by the department must be included.

Foreign Language. Ph.D. candidates in forestry and environmental studies are not ordinarily expected to have a reading knowledge of a foreign language. However, on recommendation of the student's supervisory committee, knowledge of one or more languages may be required.

Supervisory Committee. As early in a student's course of study as is practicable, and not later than two months before the preliminary examination, the director of graduate studies will nominate for the approval of the dean a supervising committee consisting of five members, with one member designated as chairman. This committee will include at least three graduate faculty members from the department and at least one from outside the department. This committee, with all members participating, will determine the program of study and administer the preliminary and final examinations. Success-

ful completion of the final examination requires four affirmative votes. The final examination may be administered by four members if the representative of the related field is present.

Residence. The minimum registration requirement is 60 units of graduate credit, of which not more than 15 units may be accepted by transfer. The minimum registration per semester is 12 units. The minimum full-time residence requirement is one academic year (two consecutive semesters) at Duke. All Ph.D. candidates must register for a full course load until they have completed the required 60 units of graduate credit. Those entering with undergraduate deficiencies may be required to take undergraduate courses for which they will not receive degree credit. The student's supervisory committee will determine what requirements above the minimum, if any, the student must meet. More complete information and requirements for the preliminary examination, the dissertation, and the final examination are outlined in the bulletin of the Graduate School.

Nondegree, Special Status

Persons interested in pursuing graduate studies in natural resources not leading to a professional or a graduate degree may apply for nondegree, special status. Such students may take from 3 to 12 units of course work each semester; they are registered with the University as a student with appropriate privileges; they receive transcripts of work completed for each semester in residence; but none of their courses will count toward a degree to be received from Duke University. Students wishing to study for only one or two semesters or to do postdoctoral work should apply for nondegree, special status. Additional requirements are contained in a later section on admissions.

Programs of Study and Research



In the School of Forestry and Environmental Studies, maximum attention is devoted to the individual student. Emphasis is placed on maintaining the highest standards of scholarship and on relevance to contemporary needs in natural resources study and research.

The educational experience at Duke is enriched by a philosophy of interdisciplinary study that takes to full advantage the breadth of professional offerings in other schools on campus. In addition, the availability of courses at the nearby campuses of North Carolina State University and the University of North Carolina makes the Duke program uniquely strong in intellectual content. Within easy commuting distances formed by the triangle of universities is found the Research Triangle Park where major public and industry-supported research programs provide excellent opportunity for work-study internships and exposure to current topics in research.

The school emphasizes three broad conceptual areas in its instruction and research: applied resource science, resource economics and policy, and quantitative methods. Regular courses, intensive courses, seminars, and special studies are offered in each of the three areas. Preparation for professional employment requires a higher degree of specialization than is characterized by this framework, however. Hence, four programs of study have been designed by the faculty to assure competence in some aspect of natural resources while offering adequate breadth of educational experience. One of these programs, Forest Resource Management, is offered under the Master of Forestry degree; the remaining three, Resource Ecology, Water and Air Resources, and Resource Economics and Policy, are offered under the Master of Environmental Management degree. Each program can be used as a foundation for obtaining the A.M., M.S., and Ph.D. degrees.

Qualified students who have interests outside of the structured programs are permitted to design individual programs of study. Pursuit of an individual program requires preparation of a comprehensive statement of objectives and specification of each of the program components: major courses, minor courses, seminars, electives, and a master's project. All individual programs of study are subject to approval by the faculty council.

Program Requirements

Each of the school's programs of study and research have similar requirements within the broad categories discussed briefly below. More specific information about requirements for any one of the programs can be obtained from the director of admissions.

Prerequisites. Students admitted to the school are expected to have had at least one introductory course in calculus, statistics and economics, and to have a working knowledge of computer programming. They are also expected to have had some previous training in the natural sciences or the social sciences related to their area of interest in natural resources. For students who select either the Resource Ecology or the Forest Resource Management program, this previous training must include an introductory course in ecology.

Students who do not satisfy all of these prerequisites may be admitted to the school but will be expected to make up these deficiencies prior to entrance by means of formal courses, independent study, or other arrangements agreed upon by the applicant and the school. A limited number of prerequisites may be made up during the first year of residence.

Credit Requirements. Each program requires the completion of 48 units of credit. These units are distributed among a set of required courses constituting the major, elective courses, a set of courses forming the minor, a master's project, and seminars relevant to the program's objectives.

Major courses. Each program requires from three to eight courses (10 to 27 units) in the major area of study. These courses are specified or, in some cases, elective within the limits of the program emphasis.

Elective Courses. Elective courses are available to give the student flexibility in developing his or her course of study. These credits are used to add depth to the major area of study or to develop a second area of expertise. Students who select the Resource Economics and Policy program and who have not had previous training in a natural resource area must use at least three of their elective courses to meet this requirement.

Quantitative and Analytical Minor. All programs require a minor of at least three courses (9 to 12 units) in quantitative and analytical methods related to natural resource analysis, modeling, and management.

Master's Project. A master's project constituting 4 to 6 units of credit is required. These projects take the form of individual or small group research efforts related to some area of natural resource management.

Seminars. All students are required to participate in seminars in their program area for 1 to 3 units of credit. During the spring semester of their second year in residence, students present the results of their master's project.

Forest Resource Management

The Forest Resource Management program integrates the biological and physical components of forest productivity with methods of modern business management. The program builds knowledge in basic forest ecology and integrates this knowledge with foundations in planning and administration for the production of forest resources. This distinctive approach is brought about by close coordination of resource inventory course work; resource oriented courses such as soils, silviculture, timber production, forest protection, tree physiology and genetics; management oriented courses such as operations research, modeling, and ecosystem analysis as applied to research and development; and courses in resource economics and policy.

The program emphasizes the use of computer based, quantitative techniques to facilitate decisions on the selection of management options to achieve objectives. Various methods of analysis are applied to all forest resources in order to optimize production within the constraints imposed by biological, physical, and economic conditions.

The central focus of the Forest Resource Management program is problem solving in complex ecologic and management systems. Within the program, students have the flexibility to gain depth in an area of specialization. Consequently, students may acquire

skills that qualify them for a variety of positions in forest products industries, government agencies, nonprofit organizations, and other groups concerned with the management, utilization, and protection of forests. The program also provides an excellent foundation for the Ph.D. and a career in research. Students who complete this program and also complete a Master of Business Administration degree in the Fuqua School of Business have particularly strong credentials for employment in private industry.

Forest Resource Management is offered under the Master of Forestry degree. Students may use electives and additional course work to accommodate a second emphasis in Resource Ecology, Water and Air Resources, or Resource Economics and Policy.

Resource Ecology

The Resource Ecology program is concerned with the application of ecological theory to the manipulation and management of both terrestrial and aquatic ecosystems. An integrated management scheme is advocated; that is, one which takes into account economic constraints, environmental ethics, and political reality.

The framework for the development of management guidelines is provided by these general ecological mandates: the recognition of a hierarchical order of study (organism, population, community, and ecosystem); the prevention of irreversible losses of ecosystem processes; the recognition and understanding of connections among various ecosystems; and the maintenance of ecosystem integrity for future generations.

The applied thrust of the program allows the student to anticipate as well as to answer questions about environmental and ecological management problems. Problem solving is based on the best possible scientific description of ecological processes and relates to appropriate data bases. Applied ecology recognizes the needs of the environmental management user community and provides an organizing framework and an information system to help minimize resource use conflicts.

Mathematical and conceptual models are invaluable in clarifying ecosystem organization. They are essential to describe basic biophysical processes, to test hypotheses, and to predict the response of ecosystems to disturbance. Consequently, a strong background in quantitative methods is required of students in this program, as it is for other programs offered by the school.

The objective of the Resource Ecology program is to train professionals for management or research positions with state or federal natural resource agencies, regional planning bodies, resource development companies, and consulting firms. Graduates of the program have practical experience with the analysis of actual ecological problems such as flooding, disturbance of wetlands, the effects of toxic substances and fertilizers on ecosystems, integrated pest management, and mining reclamation.

Resource Ecology is offered under the Master of Environmental Management degree. Majors in the program can select one of the following areas of concentration: aquatic/wetlands ecology, forest ecology, quantitative ecology, landscape ecology, or ecotoxicology. Students may use electives and additional course work to accommodate a second emphasis in Forest Resource Management, Water and Air Resources, or Resource Economics and Policy.

Water and Air Resources

The program in Water and Air Resources is concerned with the management of these renewable natural resources and their interaction with land related resources. Particular emphasis is placed on the effects of land resource management on water quality and quantity and on air quality.

Course work and other training in the program cover basic hydrologic and atmospheric processes, methods of quantitative analysis, and methods of management and decision making. The basic processes emphasized are those concerned with



watershed hydrology; stream and lake water quality; general meteorology and climatology; and the origins, transport, and removal of atmospheric pollutants. Quantitative analysis techniques include statistical methods, probabilistic and deterministic models, and optimization and simulation methods. These courses are integrated with others in water resource management, air resource management, and economic analysis.

Graduates of the program have the skills to become analysts or consultants for private industry and public agencies concerned with the management and protection of water and air resources. These employers include regional planning agencies, public utilities, fuel and ore extraction corporations, consulting firms, and hydrologic or environmental research centers.

Water and Air Resources is offered under the Master of Environmental Management degree. Majors in the program can select one of two areas of concentration: either water resources or a combination of water and air resources. Students may use electives and additional course work to accommodate a second emphasis in Forest Resource Management, Resource Ecology, or Resource Economics and Policy.

Resource Economics and Policy

Society long has had laws and institutions aimed at regulating the use of natural resources such as forests, range lands, wildlife, water, and minerals. During the past few decades, new institutions have been developed to deal with problems of water and air pollution, toxic substances, and related areas of environmental degradation. These institutions demand a professional who has the necessary expertise to staff both public and private decision-making bodies.

The Resource Economics and Policy program is designed to train such decision makers. The program emphasizes the basic methods needed by the professional for analyzing existing policy and for testing the possible outcome of new environmental and resource policy being considered by public and private agencies. The program is highly analytical and is oriented toward the analysis of contemporary problems.

Decision making in natural resource and environmental policy requires mastery of three broad areas of knowledge: the basic sciences pertaining to a natural resource or an environmental phenomenon; the relevant disciplines in the social sciences; and the quantitative methods required for using knowledge from the physical, biological, and social sciences to arrive at a decision.

Courses relevant to renewable and nonrenewable natural resources may be part of the student's educational background or may be planned as part of the master's degree. For the natural resource decision maker, the most important social sciences are resource and environmental economics, political science, and legal analysis. Economics includes production economics, the economics of public goods and externalities, public finance, and the intertemporal allocation of natural resources. Political science includes the behavior of administrative agencies, regulatory agencies, and legislative bodies. Legal analysis emphasizes the allocation of resources as reflected in property rights and environmental risks as reflected in torts. Quantitative methods, an essential component of this program, includes statistical inference, methods of optimization, and decision theory.

Students in the program have the opportunity to assist in ongoing research projects in the school's Center for Resource and Environmental Policy Research and the nearby Southeastern Center for Forest Economics Research. Such training provides a comprehensive background for a wide range of resource analysis and management careers.

Resource Economics and Policy is offered under the Master of Environmental Management degree. Students may use electives and additional course work to accommodate a second emphasis in Forest Resource Management, Resource Ecology, or Water and Air Resources.

*Center for Resource and Environmental
Policy Research*



Director

Robert G. Healy, *Adjunct Associate Professor*

Faculty

Ralph J. Alig, *Adjunct Assistant Professor*

George F. Dutrow, *Professor*

Milton T. Heath, *Adjunct Professor*

William F. Hyde, *Associate Professor*

Carlos M. Marin, *Assistant Professor*

Peter J. Parks, *Assistant Professor*

Kenneth H. Reckhow, *Associate Professor*

Harold K. Steen, *Adjunct Professor*

James G. Yoho, *Professor Emeritus*

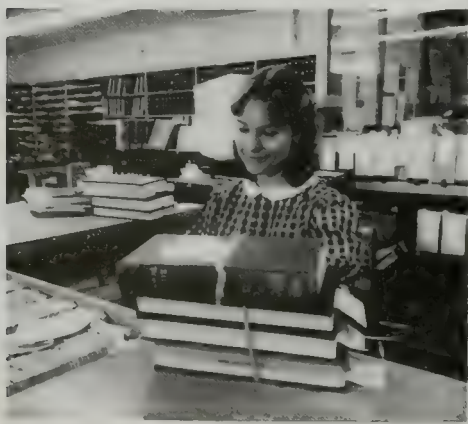
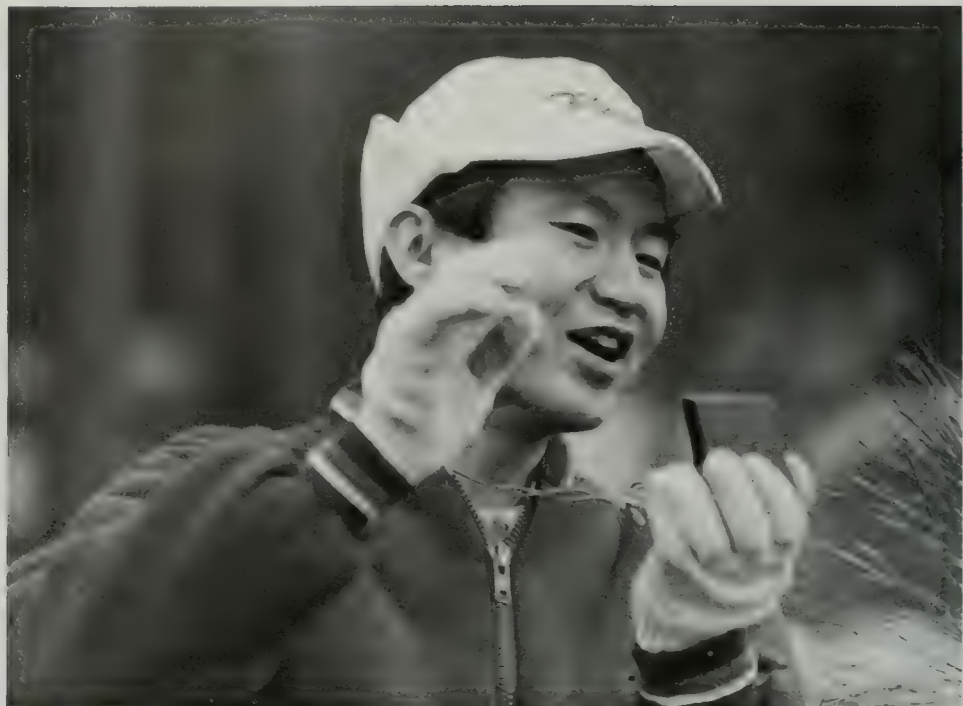
The Center. The Center for Resource and Environmental Policy Research is committed to objective and timely analyses of critical natural resource and environmental issues, both national and international.

During the past few years, a substantial and comprehensive body of legislation has been enacted to address resource and environmental problems, much of it strongly influenced by information provided by special interest groups. Often, this legislation has been drafted and passed in a quasi-crisis atmosphere with a consequent absence of mature deliberation. The center was developed in response to recognition of the many conflicts developing over competitive use of natural resources and consequent legislative regulation.

Because contemporary resource-environmental problems are deeply embedded in the social, economic, and political fabric of the country, they are in need of careful and deliberate study. It is in the national interest that such issues be examined in a setting conducive to independent thought with appropriate regard for timeliness of results and conclusions. The Center for Resource and Environmental Policy Research at Duke University is designed specifically to provide the proper setting for such an approach.

Among the current research topics are:

- Land Use Planning and Rural Development
- Policy for Resource-based Industry Development
- Educational Research and Policy Issues
- Water Resources Policy
- Resource Economics and Policy
- Forest Planning and Protection Policy
- Environmental Risk Analysis
- International Resource and Environmental Policies



The Center Organization. The center is by design and intent a flexible, multidisciplinary unit. Headed by a director and staffed by an interdisciplinary faculty, the center offers opportunities for involvement to executives, administrators, political representatives, mid-career professionals, academicians, and graduate students. A major aim is to bring together special groups of scholars and professionals to focus their attention on contemporary resource and environmental research problems.

The center is viewed as an all-campus unit at Duke University, drawing primary support from the School of Forestry and Environmental Studies while maintaining strong associations with the Schools of Law, Business, and Engineering, and the Institute of Policy Sciences and Public Affairs.

Beyond the Duke campus, the center maintains close ties with officials from government and industry and the faculty and students of other universities, particularly the University of North Carolina and North Carolina State University.

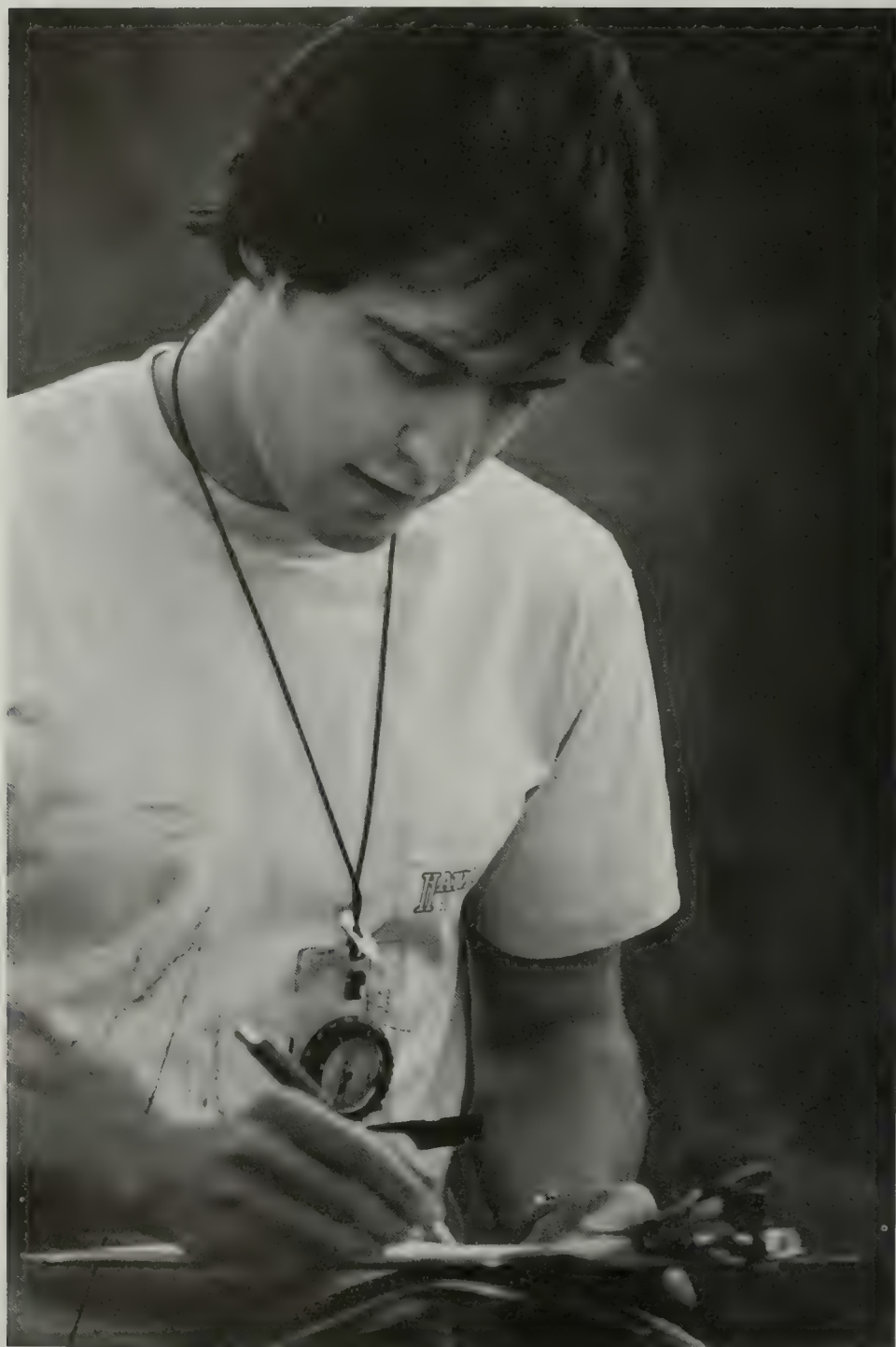
Several members of the center's faculty are allied with the Southeastern Center for Forest Economics Research. This consortium, headquartered at the Research Triangle Park, is sponsored by the United States Forest Service and several regional universities.

Graduate Study. The center provides opportunity for graduate study at the master's and doctorate level in two major areas, policy and economics, and provides minor emphasis in these same topics to students from other subject areas. Degrees are offered through the School of Forestry and Environmental Studies; in addition, concurrent degrees may be developed with the Institute of Policy Sciences and Public Affairs and with the Fuqua School of Business. Students interested in the degree program should contact the center director for a current course list and for formal admission.

For the student interested in a graduate research program at the M.S. or Ph.D. level, individually designed programs of study are directed by the center faculty in accordance with Graduate School policy.

The center offers graduate assistantships to qualified students in resource and environmental policy research. Support is available to students pursuing M.S., A.M., or Ph.D. degrees through the Graduate School at Duke University and M.F. or M.E.M. degrees in the School of Forestry and Environmental Studies.

Center for Forestry Investment



Director

William K. Condrell, *Adjunct Professor*

Associate Director

James G. Yoho, *Professor Emeritus*

Faculty Associates

George F. Dutrow, *Professor*

William F. Hyde, *Associate Professor*

Benjamin A. Jayne, *Professor*

George H. Mason, *Visiting Instructor*

William R. Sizemore, *Adjunct Professor*

Harold K. Steen, *Adjunct Professor*

Objectives of the Center. The Center for Forestry Investment is devoted to a broad program of education and research that is concerned with all aspects of private forest investment under a free market system and private ownership of property. While its geographic focus is essentially national, the center has a strong orientation to the main commercial forest regions of North America.

The center provides a focus on a critically important area dealing with future timber availability in the United States. Heretofore, there has been no central place to consider the effects of national policies on forest investment activity. Policies dealing with taxes, appraisal, insurance, and financial and institutional requirements have been developed largely without respect to the central question of how to satisfy both domestic and export markets for forest products.

Forest investments warrant particular attention because they are unique in many respects. They are capital intensive, long term, and offer only modest yields. Given these characteristics and current economic conditions, it is a challenge to facilitate the private investments required to supply the nation with low-cost timber products while leaving a surplus for export to world markets at competitive prices. At the same time, this must be accomplished without detriment to future forest resource productivity and environmental quality.

Organization and Administration. Headed by a director and an associate director, the center is a flexible, multidisciplinary unit based in the School of Forestry and Environmental Studies. It maintains close ties to other professional schools and departments within Duke University. It also draws upon the school's Center for Resource and Environmental Policy Research; the Forest Service's Southeastern Center for Forest Economics Research; the forest products industry; trade associations; and the insurance, pension fund, and financial communities for instructional assistance, advice, and consultation.



Activities of the center include conferences, symposia, and workshops dealing with the major substantive areas affecting forestry investment. Faculty in the center teach relevant courses in the school's Forest Resource Management program.

Comprehensive and scholarly research in the broad area of forestry investment is central to the mission of the center. Among the research topics are

- Investment opportunities, methods, and returns
- Barriers to investment growth in private forestry
- Appraisal, valuation, and accounting systems
- Insurance and risk management
- Issues related to property, income, and estate taxation
- Vehicles for making private investments in forestry

Publication is also an important function of the center. Conference proceedings are published as are reports on research findings. Such findings may be published as bulletins or as articles in appropriate scholarly journals.

Opportunities for Graduate Study. Specifically tailored programs of study and research may be designed to meet the goals of individual students and supervised by faculty members associated with the center. Programs leading to the Master of Forestry or Master of Environmental Management degree are administered by the School of Forestry and Environmental Studies.

For students interested in graduate research at the M.S. or Ph.D. level, individually designed programs of study are directed by faculty associated with the center in accordance with Graduate School policy.

Financial support for study and research may be available for the individual student if his or her interests contribute to the center's research objectives.

Alternative Educational Opportunities



Forest History Society

Founded in 1946, the Forest History Society is a nonprofit, nonadvocacy organization committed to balanced and objective investigations of human interaction with the forest environment through time. Although its major focus is North America, the society is involved with a network of forest historians worldwide. In 1984, it became affiliated with Duke University and moved its headquarters to Durham.

The society emphasizes the utility of history to decision making in both the public and private sectors. The society believes that most currently held opinions are strongly influenced by perceptions of the past and that a clear understanding of what really happened, as today's issues evolved, is a vital component in the process of making prudent choices.

Five major emphases enable the society to achieve its goals: *Journal of Forest History*, research and publication, archival collecting, library and reference, and service and professional outreach.

The *Journal of Forest History* is published quarterly. Its refereed articles, book reviews, bibliographic listings, and news enable investigators to keep current with the field. Research and publications, supported largely by grants, focus on topics that are important today and are also significant historically. Among the current topics are the history of forest resource technology, forest economics, sustained-yield forestry, Indian lands forestry, wood as an energy source, forest taxation, labor relations in the forest industries, and industrial forestry research.

The collection of archival materials has been a major effort since the society was founded. Included in the archives are the records of the American Forest Institute, National Forest Products Association, and the Society of American Foresters. The society's library and reference staff provide convenient access to the extensive literature of the field. Students and faculty of the university are welcome to use these valuable resources. The service and outreach emphasis enables society staff to be active participants in their professions. Included are teaching and advising assignments at the School of Forestry and Environmental Studies.

Inquiries regarding the facilities and services offered by the society may be addressed to Harold K. Steen, Executive Director, Forest History Society, 701 Vickers Avenue, Durham, NC 27701.

Integrated Toxicology Program

The School of Forestry and Environmental Studies houses the ecotoxicology track of Duke University's graduate program in toxicology. The Integrated Toxicology Program

operates under a specific charter to develop holistic and innovative approaches to toxicology training and to provide three training tracks: (1) general toxicology, with broad training in the principles and concepts of toxicology; (2) specialized toxicology, emphasizing such areas as pulmonary toxicology or biochemical toxicology; and (3) ecotoxicology.

The study of ecotoxicology focuses on the principles and concepts of both toxicology and ecology as they relate to the release, transport, exposure, accumulation, and effects of toxics on organisms and ecosystems. The curriculum is designed to teach the student the basic principles of biochemistry, physiology, toxicology, pathology, and ecology along with specific skills in ecosystem analysis, environmental health, epidemiology, statistics, and risk analysis so that he or she can design, execute, and interpret experiments in ecotoxicology.

Completion of this training program at the Ph.D. level provides career opportunities in academia, industry, and research laboratories. Master's candidates are trained for careers in industry, consulting firms, and government agencies concerned with the management of hazardous substances.

An ecotoxicology student is affiliated as a postdoctoral fellow or graduate student (Ph.D. or M.E.M.) in the School of Forestry and Environmental Studies or the Duke Marine Laboratory. All students are required to complete the core sequence of the Integrated Toxicology Program and the ecotoxicology track requirements in addition to specific degree requirements.

Students seeking admission to the program as a Ph.D. candidate make initial application to the Graduate School for admission to the Department of Forestry and Environmental Studies. Candidates for the Master of Environmental Management degree apply directly to the School of Forestry and Environmental Studies. Fellowships are available to outstanding students. Further information on the program can be found in the bulletin of the Integrated Toxicology Program.

Integrated Case Studies in Natural Resource Analysis

The case study approach to graduate education affords the student an opportunity to develop analytical and management skills through a close look at problems in resource management and policy. Case studies are used in class instruction in both traditional and intensive courses in several of the school's study areas.

In addition to utilizing completed case studies as course materials, students also have the opportunity to participate in the research and preparation of new case studies. The process of case preparation brings one in contact with professionals, businessmen, and others and offers a bridge between the academic curriculum and practical experience. This experience and the contacts made in the process of case research are valuable assets in securing employment.

The case studies are termed "integrated" case studies in natural resource analysis because they result from the cooperative efforts of a team of investigators comprising resource-ecologists, -economists, and -planners, as well as political scientists, sociologists, and others. The team approach is used in recognition of the fact that the successful analysis and resolution of the nation's complex resource and environmental problems requires a holistic perspective. Optimally, this results in an exploration of the full ramifications of utilizing natural resource systems.

One objective is to disseminate results of the integrated case studies beyond the walls of the School of Forestry and Environmental Studies. User groups have ranged from federal agencies to local and regional planners. Reflecting these diverse audiences, case study formats have varied. For example, projects have resulted in color and sound 16mm films, simulation games and workshop/conferences, as well as written reports. Typical issues addressed by past case studies include highway siting, emergency hazardous waste disposal, back country management, forest management, and the development of wetlands.

Financial assistance, in the form of graduate fellowships, is available to qualified students interested in case study analysis. Up to 8 units of academic credit may be earned for case study work. Arrangements are made in consultation with the student's faculty adviser and the case studies director.

Intensive Courses

Intended for both practicing professionals and advanced full-time students who are pursuing careers in resource management, policy, and environmental science, the intensive courses offer an alternative to traditional full-semester courses. The sessions are designed to allow regular students to blend theory with practical experience as well as to allow experienced professionals to update theory and methodology. Recognized subject matter specialists provide instructional resources not normally available to the University community. The result is an enriched educational experience through the exchange of ideas and information by participants of diverse backgrounds.

The intensive courses are organized into week-long modules and classes are held three or more hours a day during the week. A course consists of one, two, or three modules, each a discrete unit of study which may be taken alone for credit. In multimodule courses, however, the first week may be a prerequisite to other weeks in the series.

School of Forestry and Environmental Studies students (M.F. and M.E.M. degree candidates) earn 1 to 3 units of credit for each intensive course. Registration is limited; students in their second year of study are given priority. Students may not register for more than two intensive courses in a semester without special permission from the faculty council.

Courses in the intensive course series are listed in a special section in the chapter "Courses of Instruction" in this bulletin. They also are described as part of the Senior Professional Program. A brochure containing complete information on the intensive courses to be offered during a semester may be obtained from the school office.

Laird, Norton Distinguished Visitor Series

Through the generosity of the Laird, Norton Foundation of Seattle, Washington, a Distinguished Visitor Series has been established to bring outstanding guests to the School of Forestry and Environmental Studies each Friday during the spring semester. The major focus of their day on campus is a noontime seminar on current land management concepts, practices, and policy issues. Topics and speakers are selected in accordance with interests of faculty and students to reflect the international natural resource scene, as well as the major timber growing regions of the United States. Speakers are drawn from the senior administrative ranks of public agencies, industries, nonprofit organizations, and the consulting field. Each presentation is followed by an informal luncheon with a smaller group of students and faculty, which permits continued discussion. In addition, students and faculty can arrange to meet privately or in small groups with the guest during the morning. The Distinguished Visitor Series can be taken for 1 unit of seminar credit, if a student desires.

In addition to the Distinguished Visitor Series, the Laird, Norton Foundation grant helps to support other courses and activities which meet the objective of the exchange of ideas between practicing natural resource professionals and university students and faculty. These activities include a forest management seminar series, a forest utilization field trip to industry facilities in the South, and a western field trip.

Internships

An internship with a public agency, forest products industry, environmental consulting firm, or conservation organization is a valuable part of graduate professional edu-

cation. The School of Forestry and Environmental Studies Office of Placement and Internship works with natural resource professionals to develop paid intern opportunities for all interested professional and graduate degree candidates.

The Duke School of Forestry and Environmental Studies Fellows Program is a mutually funded internship option developed by the Office of Placement and Internship to facilitate work experience suitable to the student's academic and career goals. A student in the program is hired by an outside organization to work full time during the summer and is paid by that organization. During the following academic year, the student continues to work part time for the same organization on the same project, but is funded by the School of Forestry and Environmental Studies. Students who wish to work for an organization that does not sponsor paid internships may submit proposals through the Office of Placement and Internship to appropriate foundations for funding of up to \$3,000. To date, most of these proposals have been approved.

Most student pursue internships during the summer between their first and second years of study, although internships may be taken at other times and for a longer duration. Academic credit can be earned for an internship; however, in order to receive credit, a plan of study must be prepared in advance and approved by the student's faculty adviser and the dean. The internship must contribute substantially to the educational objectives of the student. With approval, students may use a part or all of the intern experience to fulfill the master's project requirement. Further information may be obtained from the school office.

International Studies

The School of Forestry and Environmental Studies has a history of contribution to international education and research. Graduates of the school, some of them foreign nationals, hold significant positions in many countries—in multinational corporations, United States government agencies, or resource and conservation organizations that have global responsibilities. Members of the faculty have served overseas in programs of teaching and research, in both the developed and developing parts of the world.

The contemporary need for greater attention to international studies has led the school to develop professional associations and curriculum options for students who wish to combine international interests with study of natural resources and the environment. Duke University is a member of the South-East Consortium for International Development, the South Atlantic States Association for Asian and African Studies, and the Organization for Tropical Studies. On campus, an active Center for International Studies provides a rich array of educational and research opportunities with global emphasis. The potential exists for student participation in international projects through competition for grants and fellowships. In addition, students in the school may elect area studies or languages to further their understanding of global issues and cultures.

The school welcomes foreign students and considers an international student body of value to the learning environment. Through both formal and informal interaction, students from various cultures exchange information and opinions on resource and environmental problems and their alternative solutions. Qualified foreign students in Trinity College and in graduate and professional schools of the University are admitted to courses in the school, subject to the approval of the student's dean and the dean of the School of Forestry and Environmental Studies.

Cooperative Colleges

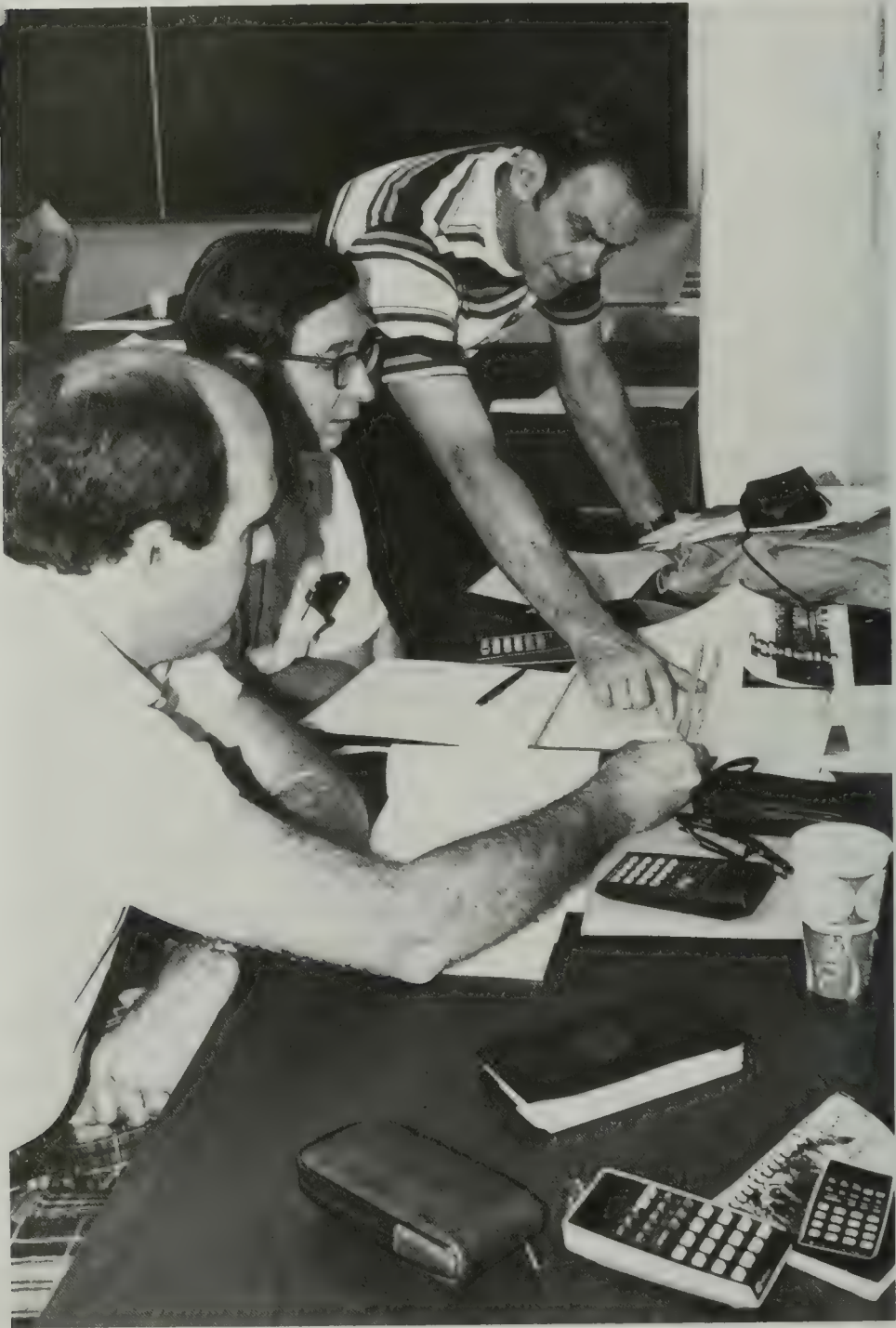
The Cooperative College Program is designed to coordinate the education of students in selected undergraduate schools with graduate programs in the broad area of resources and environment offered at Duke. Students are accepted for either of two degrees, the Master of Forestry (M.F.) or Master of Environmental Management (M.E.M.).

Although the program is designed to accommodate a wide range of undergraduate backgrounds, experience of several years indicates that it is best suited to majors in one of the natural or social sciences, pre-engineering, business, natural resources, or environmental science.

The program accepts students after three years of undergraduate study or upon completion of the baccalaureate. With appropriate guidance, highly qualified students can reach a satisfactory level of preparation for graduate work at Duke in three years of coordinated undergraduate study. The baccalaureate degree is awarded by the undergraduate school after the student has earned enough units at Duke to satisfy the requirements of the undergraduate institution. Minimum time required to complete the bachelor's degree is two full-time semesters at Duke. After four semesters at Duke, in which a minimum of 48 units of credit is earned, students may qualify for one of the professional master's degrees.

A student interested in entering the Cooperative College Program should apply to one of the participating schools. Each can provide information on courses of study and bachelor's degree requirements. Students applying for admission to Duke after the third year of study should do so early in the first semester of the third year. Students applying for admission after completion of the baccalaureate should return completed application materials by 15 February. Applicants from the participating schools are considered regular applicants for admission and are judged by the same criteria; therefore, students should submit application forms, transcripts, letters of recommendation, and results of the Graduate Record Examination.

Senior Professional Program



Keeping up with new knowledge presents a challenge to all professionals. For the natural resource based industries and agencies, the problems of technical change are compounded by rapidly changing social, political, and economic values. The forest resource, for example, must be managed to produce a reasonable return on investments as well as to provide a reliable source of future raw materials. The forester of today must be well-versed in the techniques of forest management and those of resource analysis to ensure financial solvency in times of increasing economic stress. An understanding of the management sciences and the concepts of operations research is also vital. Few natural resource professionals have this background, however, and few are able to combine formal, continuous educational programs with the day-to-day pressures of a career.

The School of Forestry and Environmental Studies recognizes the need for contemporary educational opportunities for professionals in the field and for efficient use of the individual's time. The Senior Professional Program is intended to provide working professionals with an opportunity to come to Duke University either to update managerial skills or to earn a professional master's degree with a minimum period of residence. The program offers symposia, managerial seminars, intensive courses, and regular University courses for qualified professionals.

Elements of the program may be taken for intellectual gain, for certified continuing education (CEU) or Continuing Forestry Education (CFE) credit, or for graduate credit. Formal degree work may be carried out through a combination of approaches.

The Senior Professional Program allows the participant to tailor an educational experience to individual needs. A brief description of opportunities follows. Inquiries for further information may be addressed to the Office of the Dean.

Symposia and Managerial Seminars

The School of Forestry and Environmental Studies annually sponsors one- or two-day symposia and seminars. Recent sessions have dealt with alternative uses of coastal wetland ecosystems, United States and Canadian interdependence on natural resources, and data and information needs for nonindustrial private forests. Managerial seminars have covered such topics as legal problems in woodlands operations, financial accounting, and principles of taxation applied to the forest industries. Presentations at these meetings are made primarily by outside experts, with Duke faculty serving as moderators and panelists. Although participants in the symposia and seminars do not earn academic credit, they do have an excellent opportunity to meet other professionals, exchange ideas, and increase their knowledge in the area of discussion.

Intensive Courses

The cornerstone of the Senior Professional Program, the intensive courses cover a wide variety of topics focusing on the management and analysis of forest, land, and water resources. Subject matter is changed periodically in response to the needs of working professionals. Instructors are experts who have an established reputation in their respective fields. As a result, participants are exposed to up-to-date, state of the art information that is available from few other sources.

The intensive courses are structured as week-long modules in which classes meet twice a day for a minimum of fifteen lecture hours. The classes often include workshops and independent or group projects in addition to formal lectures in a classroom setting. Ample time is allowed for informal discussion with the instructor and other class members.

All professionals receive a certificate of recognition upon completion of an intensive course. Those who wish may receive certified continuing education credit (CEU) by so specifying upon registration. The courses also qualify for Continuing Forestry Education (CFE) credit administered by the Society of American Foresters. Participants who are admitted to the School of Forestry and Environmental Studies as candidates for the Master of Forestry or Master of Environmental Management degree may take certain intensive courses as part of degree requirements. These students may earn 1 to 3 units of credit for an intensive course.

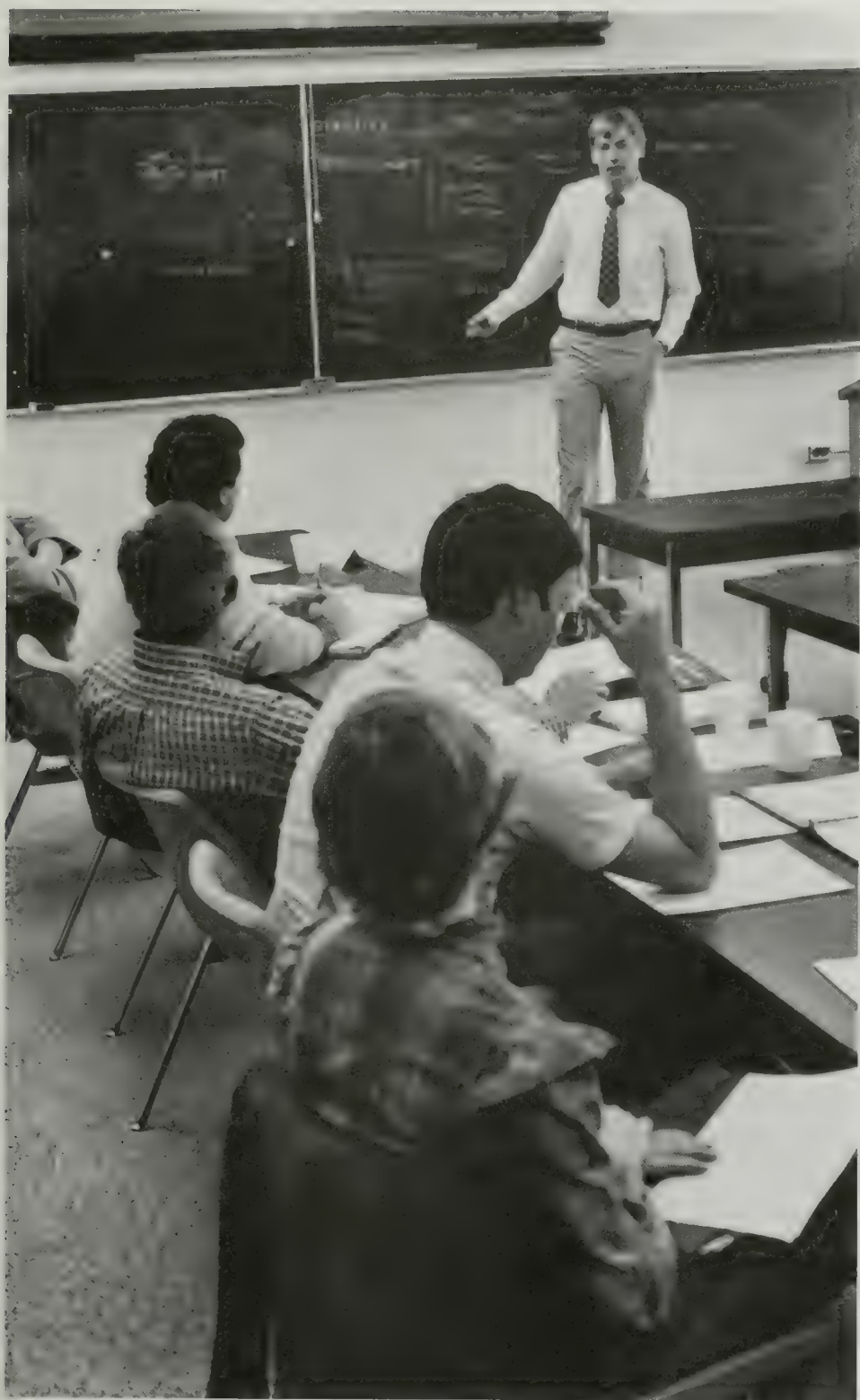
Intensive courses are listed in a special section in the chapter "Courses of Instruction" in this bulletin. A brochure describing the Intensive Course Program, courses offered during a particular semester, registration procedures, and fees is available upon request.

Master's Degrees for Professionals

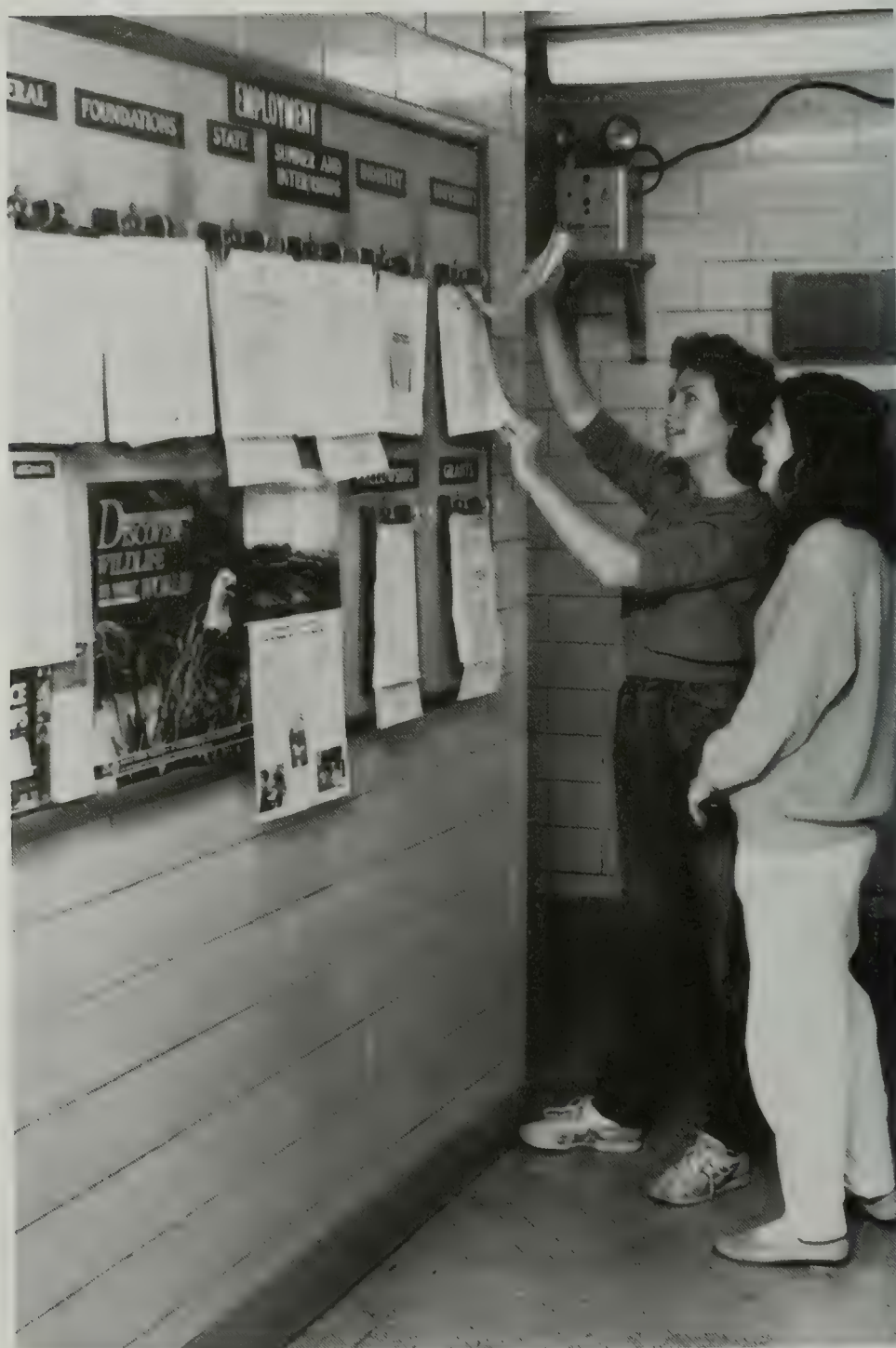
Qualified professionals may be admitted to the School of Forestry and Environmental Studies as part-time students. By taking a three-month leave of absence from their jobs, these professional degree candidates spend a full semester at Duke enrolled in regular, graduate level courses. Up to 15 units of academic credit are taken during this time. The remaining 15 or more units of credit needed for a Master of Forestry or Master of Environmental Management degree may be earned in absentia or on campus as career responsibilities permit. Part-time degree candidates have up to five years in which to complete all requirements.

Specific degree requirements for students in the Senior Professional Program, including required courses and the number of academic units necessary to complete the degree, are established by the faculty council upon evaluation of the individual's previous education, working experience, and career goals. A minimum of one semester in residence and 30 units of credit are required. A master's project, which may be completed in absentia, representing 4 to 6 units of credit also is required.

Applicants for degrees through the Senior Professional Program follow the same application procedures as regular students in the school. Applications must be submitted by February for the fall term and by October for the spring term. Normally, degree candidates in the Senior Professional Program take the required semester in residence during the term following admission.



Career Planning and Placement



Placement

The School of Forestry and Environmental Studies operates its own career planning and placement services for all incoming students, graduate and professional students, and alumni of the school. Assistance is given to students in finding summer employment and internships, permanent employment upon graduation, and mid-career changes of employment.

Career Planning Seminars. Individual counseling and group workshops are provided by a professional staff member to assist students in the development of job search strategies and skills, resume preparation, and interviewing techniques. Presentations by alumni of the school enable students to discuss employment options with practicing natural resource professionals.

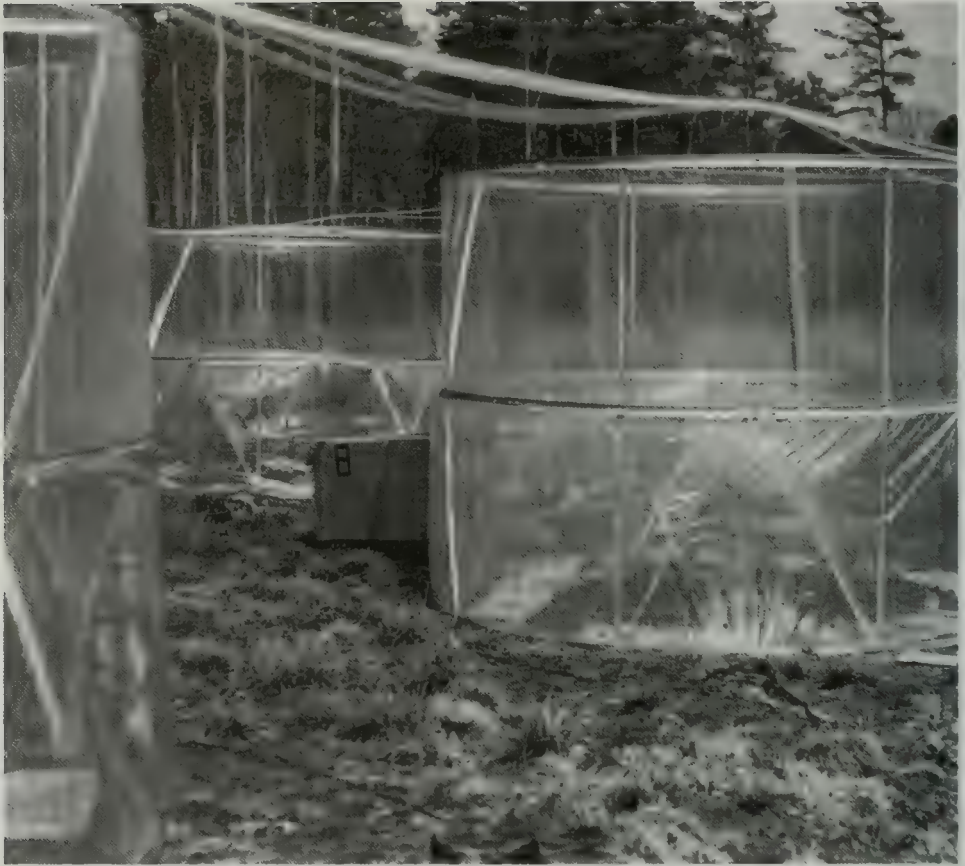
Internships. Although the School of Forestry and Environmental Studies does not require internships, students are strongly encouraged to explore career options and enhance their professional training through paid internships with public or private sector natural resource employers. In addition to traditional summer internships, the Office of Placement and Internship has information on a variety of options that students may consider when arranging practical training. See also the section on internships in the chapter, *Alternative Educational Opportunities*.

Job Search Assistance. The Office of Placement and Internship maintains a current listing of employment opportunities from private industry; local, state, and federal governments; universities; and nonprofit organizations. Career planning and placement resource materials are housed in the office. Both current students and graduates are encouraged to use the alumni network established to offer placement assistance.

A resume book is published annually by the school and distributed nationally to potential employers. Students are encouraged to prepare and submit resumes, with the assistance of the staff, for publication. Employer response to the resume book has been favorable, and many students have received initial contacts and invitations to interviews as a result.

On-campus Interviews. Each year the School of Forestry and Environmental Studies placement office, in conjunction with the Duke University Office of Placement Services, 214 Flowers Building, invites representatives from a number of firms and government agencies from throughout the country to visit the school to interview students for internships and permanent positions. Second-year degree candidates are offered an opportunity to assemble a complete dossier of academic records and recommendations to supplement applications for positions and to have a permanent file for future reference. All dossiers are kept in the University's Office of Placement Services to insure confidentiality. Students are strongly urged to begin formulating their job-hunting strategies and implementing the job search at least six months prior to graduation.

Employment Offers. The success experienced by degree candidates in securing employment serves as a strong testimony to the value of graduate/professional study at Duke. Students are advised to gear their education to a specialized area in order to increase



their marketability. Toward this goal, every effort is made to place each student in a paid internship appropriate to his or her field of study and geographic preference. Summer placements with local organizations are often continued as part-time positions during the student's second year of study, adding to the base of professional experience.

Beginning salaries vary, depending upon the educational specialization, capabilities, and prior experience of the candidate as well as the type of organization and geographical region in which he or she is employed. For recent graduating classes, beginning salaries have ranged from \$16,000 to \$33,000 annually with candidates having some prior experience and/or advanced quantitative skills commanding the higher figures.

Despite the economic climate of the early 1980s, graduates of the school have continued to find challenging, satisfying employment within their areas of interest. Environmental consulting firms and the forest products industry have attracted a large percentage of recent graduates. A somewhat smaller number have accepted employment with federal, state, and local governmental agencies and conservation organizations.

The market for natural resource managers is expanding. In both the private sector, where environmental divisions are being established within traditional corporations, and in the public sector, where policy-making bodies increasingly face environmental concerns, School of Forestry and Environmental Studies graduates are hired in research, planning, administrative, and consulting capacities. To a smaller degree, international organizations utilize natural resource managers; students interested in international employment usually benefit from experience such as that gained through the Peace Corps.

The following is a list of selected organizations with which graduates of the past several years are affiliated.

The Aerospace Corporation	National Park Service
Agriland Associates	Government of Nepal
Alabama Forestry Commission	New Hampshire Office of State Planning
American Forest Institute	North Carolina Department of Natural Resources and Community Development
Appleton Papers, Inc.	North Carolina State University, Agricultural Extension Service
Arkansas Nature Conservancy	Oak Ridge National Laboratories
City of Baltimore, Maryland	Ohio Agricultural Research and Development Center
Bartlett Tree Expert Company	Oklahoma Scenic River Commission
Battelle Columbus Laboratories	Oswego County, New York, Department of Planning
Boise Cascade Corporation	Pacific Environmental Services
Buckeye Cellulose Corporation	Peace Corps
Champion International Corporation	Quinault Indian Nation, Department of Natural Resources
Chesapeake and Potomac Telephone Company	Radian Corporation
Chesapeake Corporation of Virginia	Research Triangle Institute
Clemson University, Department of Recreation and Park Administration	Resources for the Future
Connecticut Department of Environmental Protection	Scott Paper Company
Container Corporation of America	South Carolina Commission of Forestry
Government of Costa Rica	South Carolina Nature Conservancy
Crown Zellerbach Corporation	South Dakota Division of Conservation
Duke University, School of Forestry and Environmental Studies	TRW, Environmental Engineering Division
Duke University, Center for International Studies	Union Camp Corporation
Environmental Research and Technology, Inc.	United States Agency for International Development
Florida Division of Forestry	United States Bureau of Land Management
GCA/Technology, Inc.	United States Bureau of Reclamation
Georgia-Pacific Corporation	United States Department of Agriculture, Forest Service
Green Diamond Forestry Service	United States Environmental Protection Agency
INTASA, Inc.	University of Florida, School of Forest Resources and Conservation
International Paper Company	University of Maine, School of Forest Resources
ITT Rayonier, Inc.	WAPORA, Inc.
Ketron, Inc.	Westvaco Corporation
King County, Washington	West Virginia Department of Agriculture
Louisiana-Pacific Corporation	Weyerhaeuser Company
Maryland Department of Agriculture	City of Wilson, North Carolina
Maryland Land Trust	
The Mead Corporation	
Montana Division of Forestry	
National Bank of North America	
National Forest Products Association	

Admissions



The student contemplating study at Duke in natural resources and the environment can enter either the School of Forestry and Environmental Studies or the Graduate School. Admissions procedures differ somewhat depending on the choice of degrees. The professional degrees, consisting of the Master of Forestry (M.F.) and Master of Environmental Management (M.E.M.), are administered by the School of Forestry and Environmental Studies. Students wishing to earn either of these professional degrees should apply directly to the school. Those preferring to earn a Master of Science (M.S.), Master of Arts (A.M.), or Doctor of Philosophy (Ph.D.) degree should apply to the Graduate School. Students contemplating study for the Ph.D., but who are undecided at present, may find it desirable to complete one of the professional master's degrees in the school (M.F. or M.E.M.) and apply to the Graduate School for admission to the Ph.D. program at a later date.

Admission to the School of Forestry and Environmental Studies

The School of Forestry and Environmental Studies welcomes applications from men and women of all backgrounds who seek an intellectually challenging education designed to prepare them for leadership in a wide variety of natural resource and environmental positions. The programs do not require previous study in forestry or environmental studies. However, they are designed primarily for students with a degree in one of the natural or social sciences (including chemistry, biology, physics, economics, earth sciences, environmental sciences, mathematics, and political science) or a preprofessional area such as forestry, engineering, or business.

Admission is open to men and women who hold a bachelor's degree from an accredited college or university or who have completed at least three years of study in an institution participating in the Cooperative College Program. Students who do not have a bachelor's degree and are not enrolled in one of the cooperative colleges may apply to the school for special eligibility. Special eligibility is granted in a limited number of cases to individuals who can meet the school's admission criteria and who have completed the equivalent of 90 semester hours of acceptable undergraduate credit. Those interested in consideration for special eligibility must receive approval from the director of admissions before submitting an application.

Admission as a special or nondegree student may also be granted under appropriate circumstances.

Prerequisites. Students admitted to the school are expected to have had at least one introductory course in calculus, statistics and economics, and to have a working knowledge of computer programming. They are also expected to have had some previous training in the natural sciences or the social sciences related to their area of interest in

natural resources. For students who select either the Resource Ecology or the Forest Resource Management program, this previous training must include an introductory course in ecology.

Although students without the level of preparation described above may be accepted for admission, it is expected that deficiencies will be made up prior to entrance by means of formal course work, independent study, or other arrangements agreed upon by the applicant and the school. A limited number of deficiencies may be made up during the first year of residence.

Admission Criteria. Admission to the School of Forestry and Environmental Studies is highly selective. Academic performance as an undergraduate, scores on the Graduate Record Examination, and full-time work experience are the primary factors. Recommendations, the statement of educational goals, extracurricular activities, part-time and summer work experience, and other information requested on the application also provide a basis for selection.

The Admissions Committee considers each applicant as an individual. It attempts to evaluate each candidate for his or her academic potential, professional promise, and ability to benefit from and contribute to the goals of the school.

Application Procedures. Except in unusual circumstances, students are admitted only at the beginning of the fall term. Applications are accepted at any time; however, applications which include requests for financial aid should be submitted by 15 February preceding the fall in which admission is desired. Because the school processes applications from more qualified students than it can admit, early submission of applications is recommended.

Students who, because of unusual circumstances, wish to begin their studies in January should complete their application no later than 15 October prior to their matriculation. It should be noted that financial awards are allocated to students beginning in the summer or fall, and few awards will be considered for January applicants.

Application for admission to the Master of Forestry and Master of Environmental Management degrees is made through the Office of Admissions of the School of Forestry and Environmental Studies. All correspondence should be addressed as follows: Director of Admissions and Financial Aid, School of Forestry and Environmental Studies, Duke University, Durham, North Carolina 27706.

Each applicant must submit the following before action can be taken:

1. application form;
2. transcripts from each undergraduate and graduate school attended;
3. three letters of recommendation;
4. scores on the aptitude (verbal, quantitative, and analytical) test of the Graduate Record Examination;
5. a nonrefundable application fee of \$45.

Application Forms. No applicant will be considered until the completed application form and related documents are received by the director of admissions. The Admissions Committee attaches considerable weight to the statement of educational objectives submitted by the applicant. This statement should reflect well-defined motivation to pursue graduate study. The school is particularly interested in applicants who show leadership potential in the broad field of natural resources and the environment. Applicants are expected to demonstrate the maturity and sense of purpose essential to a demanding educational experience, including a concept of the value of professional education to the applicant's career plans and expectations.

Transcripts. Official transcripts of all undergraduate and graduate study should be sent directly to the director of admissions by the registrar of each institution attended.

Letters of Recommendation. Each applicant is required to arrange for the submission of three letters of recommendation, preferably on the form supplied with the application. These recommendations provide the Admissions Committee with evaluations of the applicant's past performance in academic and employment related situations. Although recommendations from any source are acceptable, at least one job related recommendation and one from a college instructor or administrator are desirable.

Graduate Record Examinations. All applicants for degree programs must take the aptitude test (verbal, quantitative, and analytical) of the Graduate Record Examination (GRE). Although not required, applicants are encouraged to take an advanced test and submit the score as additional information for admission. The GRE is administered by the Educational Testing Service at locations throughout the world. Applicants are urged to take the exam at the earliest convenient date. Scores on tests taken later than October may not reach the school until after the 15 February deadline for application for financial aid. Scores should be reported directly to the director of admissions. Registration forms may be obtained by writing to GRE, Educational Testing Service, Princeton, New Jersey 08540.

Application Fee. A nonrefundable application fee of \$45 is required of all applicants. A personal check, money order, or cashier's check made payable to Duke University is acceptable. Applications will not be officially received or processed until the required fee has been paid.

Interviews. An interview with a member of the Admissions Committee is not required but may be helpful to the applicant as well as to the school. Consequently, those applicants who can visit the school are encouraged to do so. The interview presents an excellent opportunity for the applicant to ask questions, gain insight into the school, and bring items of concern to the attention of the Admissions Committee. Applicants are encouraged to allow sufficient time to visit classes, meet students and faculty, and tour the University and Duke Forest.

In general, interviews can be scheduled on weekdays throughout the academic year. Appointments should be made at least two weeks in advance. Visits during the summer months are possible but should be scheduled well in advance.

Each year faculty or other representatives of the school travel throughout the country to visit undergraduate schools. Applicants from the cooperative colleges should check with their program adviser for details of these visits. Applicants from other institutions interested in meeting with a representative of the school should write or call the director of admissions. In addition, it is sometimes possible to arrange an interview with an alumnus, particularly where distance precludes travel to Durham. In all of these situations the emphasis is on exchanging information with the applicant.

For further information or to arrange an interview, applicants may write to the director of admissions or call (919) 684-2135.

Deferred Admission. Normally, applicants are admitted only to the class for which they have applied. However, a deferral of admission may be granted for the applicant to gain experience or to strengthen academic qualifications for graduate study or for other valid reasons. Except in unusual circumstances, a deferral of admission cannot be granted for more than one year. Deferrals are granted on individual bases. The small size of each class frequently precludes open-ended guarantees of future admission; however, applicants with substantial reasons for deferring the start of graduate work are encouraged to send a request and the required tuition deposit to the director of admissions as soon as possible after receiving an offer of admission. Offers of financial assistance are cancelled upon deferral of admission and students must be reconsidered for financial aid.

Application Deadlines. Application forms and all other information required to complete the application and to allow a student to be considered for admission should be

submitted to the Office of Admissions by 15 February for the fall term and by 15 October for the spring term. Although applications submitted after these dates may be considered, early application is recommended because the school receives applications from more qualified students than can be accommodated. All candidates should make arrangements to complete the Graduate Record Examinations well in advance of these deadlines. Applicants seeking financial assistance in the form of scholarships, fellowships, and assistantships for the fall term must have their applications completed no later than 15 February.

Response to Offer of Admission. When admission is approved, the applicant will receive an offer of admission and an acceptance form. A nonrefundable tuition deposit of \$300 is required with acceptance of the offer. The admission process is not complete until the acceptance form and the tuition deposit have been returned to the director of admissions.

Additional Procedures for International Students. Each year the School of Forestry and Environmental Studies welcomes a number of international students among its professional and graduate candidates. Applicants from other countries must meet the same criteria as applicants from the United States. All academic transcripts and other documents in support of admission must be accompanied by an official translation if the original document is not in English. The nonrefundable application fee of \$45 (U.S.) must accompany the application. Applicants must have a fluent command of oral and written English. No allowance is made for language difficulty in arranging course schedules or in evaluating performance.

If the native language is not English, the applicant must submit scores on the Test of English as a Foreign Language (TOEFL) to be considered for admission. All arrangements for taking the TOEFL must be made directly with the Educational Testing Service, Box 899, Princeton, New Jersey 08540.

All foreign students whose native language is not English will be tested during their first registration period for competence in the use of oral and written English. Until such competence is determined, admission and arrangements for an award involving teaching must remain provisional. Students found to lack necessary competence should be prepared to assume all costs for being tutored in English and should reduce their course or research program by 3 units while being tutored. Students who do not successfully pass the test for competence in the use of oral and written English by the end of their first year of residency will not be permitted to continue their graduate work at Duke University.

The visa-granting authority in the student's country of origin, ordinarily the United States Embassy, requires proof that sufficient funds are available to the student to cover the expenses of all academic years of study before a visa can be granted. Foreign students are not eligible for federal and state loans, although they may qualify for certain educational loans through private United States agencies. Current immigration laws make it extremely difficult for the foreign student to find summer employment and permanent employment in the United States after graduation.

Admission to the Graduate School

Applications for admission to M.S., A.M., and Ph.D. degree programs in forestry and environmental studies should be obtained from and returned to the Dean of the Graduate School, Duke University, Durham, North Carolina 27706. However, initial inquiries and questions concerning fields of study are best directed to the Director of Graduate Studies, School of Forestry and Environmental Studies. In addition, prospective students are urged to write directly to professors whose research interests match their own to discuss opportunities.

Admission with Nondegree Status

Persons wishing to enter the School of Forestry and Environmental Studies as a non-degree student must submit a special application form calling for nondegree status along with an application fee of \$20. The applicant must have completed a bachelor's degree from an accredited college or university and must submit an official transcript of all previous course work. The Graduate Record Examination is not required although the GRE score is helpful in the admissions process. The student must have one letter of recommendation; this letter should indicate why the applicant should be allowed to undertake nondegree study at Duke. The application itself requires a brief statement of purpose in which the applicant should state his or her reasons for such study at Duke.

School of Forestry and Environmental Studies—(area code 919) 684-2421
Dean's Office—684-2135
Graduate School—684-3913
Department of Housing Management—684-5813
Registrar—684-2813

Financial Information



Tuition and Fees*

The cost of graduate study in the School of Forestry and Environmental Studies at Duke is met primarily from income from endowment, gifts, grants, and research contracts. Substantially less than one-half of the total cost is covered by tuition. In general, the cost of a graduate education of the quality offered by Duke University is modest in comparison with that of other private institutions.

Estimated Expenses for the Academic Year. Certain basic expenditures, such as tuition and housing, are to be considered in preparing a student's budget. The following approximate costs, applicable in 1987-88, are indicative of costs that can be expected by M.F. and M.E.M candidates; A.M., M.S., and Ph.D. students should consult the bulletin of the Graduate School.

Tuition (\$4,000 per semester)	\$8,000
Student health fee (\$110 per semester)	220
Housing	2,760
Food	2,080
Books and supplies	585
Motor vehicle registration	
automobile	50
motorcycle	25
Optional athletic fee	75

In addition to these necessary expenses, the student will incur others which will depend to a large extent upon the tastes and habits of the individual. The average Duke student, however, can plan on a budget in the range of \$12,500 to \$16,000 for the academic year. Travel costs, clothing purchases, and other major expenditures should be included in this estimate. Students with families naturally will have higher expenses.

Flat-fee Tuition. The flat-fee tuition, which was instituted in fall 1987, allows Master of Forestry and Master of Environmental Management degree candidates to register for any number of units greater than 8 for a fixed tuition payment per semester. The normal full-time enrollment is expected to be 12 units per semester, although units may vary from 9 to 15 depending upon the student's academic and assistantship requirements. Permission is required to register for fewer than 9 or more than 15 units in a semester.

*The figures contained in this section are projections and are subject to change.

If the student is permitted to be enrolled part time (fewer than 9 units), he or she will be charged per unit of credit at one-twelfth the semester rate (\$334 per unit for the 1987-88 academic year).

Students who wish to earn additional credits during the summer will be charged at the part-time rate per units of credit. Students in the one-year degree option who have completed two semesters in residence and all course requirements except the master's project will be charged a minimum registration fee (\$100 for 1987-88) for the summer and each semester until the degree is completed.

Payment of Accounts. Monthly invoices for tuition, fees, and other charges are sent by the Office of the Bursar and are payable by the invoice due date no deferred payment plans are available. As a part of the agreement of admission to Duke University, a student is required to pay all invoices as presented. If full payment is not received, a late payment charge as described below will be assessed on the next invoice and certain restrictions as stated below will be applied.

Late Payment Charge. If the *total amount due* on the student invoice is not received by the invoice due date, a penalty charge will be accrued from the billing date. The penalty charge will be at a rate of 1.34 percent per month (16 percent per annum) applied to the *past due balance*. The *past due balance* is defined as the previous balance less any payments and credits received during the current month. Student loan payments, if delayed for reasons beyond the individual's control, are treated as a credit on the student's invoice until the loan payment is received.

Restrictions. An individual will be in default of this agreement if the *total amount due* is not paid by the due date. An individual who is in default will not be allowed to register for classes, receive a copy of the academic transcript, have academic credits certified, be granted a leave of absence, or receive a diploma at graduation. In addition, an individual in default may be subject to withdrawal from the University.

Tuition Refund Policy. In the case of withdrawal from the University, students may elect to have tuition refunded or carried forward as a credit for later study according to the following schedule:

Withdrawal	Refund
Before classes begin	full amount
During first or second week	80 percent
During third, fourth, or fifth week	60 percent
During sixth week	20 percent
After sixth week	None

Tuition charges paid from grants or loans will be restored to those funds on the same pro rata basis and will not be refunded or carried forward. The schedule also applies to housing charges of students moving from University housing to off-campus housing. The student health fee will not be refunded except when withdrawal occurs before classes begin. In the event of death, a full refund of tuition and fees will be granted.

Late Registration. Students who register at a date later than that prescribed by the University must pay a fee of \$25 at the bursar's office.

Audit Fee. Students registered for a full course load may audit courses without charge. Otherwise, audit fees are \$115 per course during fall and spring and one-half of tuition during the summer.

Transcripts. Transcripts are available on request for a fee of \$2, payable in advance, for a single copy. Additional copies to the same address are fifty cents.

Housing Charges. Rent at Town House Apartments is \$2,012 per person in a two-person, two-bedroom unit. Utility charges are not included.

Modular homes rent for \$1,769 per person for a three-person, three-bedroom unit. Utilities are not included.

Central Campus Apartments rents are: \$3,118 for a one-person efficiency unit; \$2,378 per person in a two-person, two-bedroom unit; and \$2,020 per person in a three-person, three-bedroom unit. Rent includes furnishings and utilities, but it does not include telephones.

Housing costs are subject to change prior to any academic year. A \$100 deposit is required with all housing applications. This deposit only ensures a place on the housing waiting list and does not ensure any requested residence. The deposit is refunded if there is no room or if the applicant withdraws the application before an assignment is made.

Motor Vehicles. Motor vehicles parked on campus must be registered with the traffic office. Registration must be completed five days after operation on campus begins. The proper registration decal should be displayed on the vehicle. A registration fee of \$50 is charged for each automobile and \$25 for each motorcycle.

The following documents are required to register a vehicle: (1) valid state registration for vehicle registered, (2) valid state operator's license, and (3) satisfactory evidence of automobile liability insurance coverage with limits of at least \$10,000 per person and \$20,000 per accident for personal injuries and \$5,000 for property damage, as required by the North Carolina Motor Vehicle Law.

Optional Athletic Fee. For the optional athletic fee, the student obtains admission to all regularly scheduled University athletic contests held on the University grounds during the academic year. This fee is payable at the beginning of the fall semester.

Student Health Fee. All students are assessed a fee for the Student Health Service. For the fall and spring, the fee is \$220 (\$110 per semester). For the summer, the fee is \$37 per term.

Tuition and Fees for the Summer. For M.F. and M.E.M. students who wish to take additional credits during the summer, the tuition is one-twelfth the semester flat-fee rate per unit of credit (\$334 per unit in summer 1988). For students in the one-year degree option who have completed residence and course requirements except for the master's project, the summer registration fee is \$100 for 1988. The summer student health fee and audit fee are listed above. Information on fees, housing, policies and procedures related to the Duke University summer session is available from the summer session office, 121 Allen Building.

Financial Assistance

Financial assistance in the form of scholarships, fellowships, or student grants is available for qualified students pursuing either the professional degrees (M.F. or M.E.M.) or the graduate degrees (A.M., M.S., or Ph.D.). The school is a participant in the Graduate and Professional Student Financial Aid Service (GAPSFAS). All students must file application with GAPSFAS to be considered for financial aid. Typically, a student may be offered either a scholarship or fellowship (to defray a part of the tuition) and a student grant or research assistantship. Applicants may obtain a GAPSFAS form from a college or university counseling and placement center or from GAPSFAS, Box 2614, Princeton, New Jersey 08540.

Scholarships are granted from University funds which are in limited supply. Consequently, only well-qualified students can expect to receive awards. Scholarships are awarded on the basis of demonstrated outstanding academic ability and a high degree of professional promise. Most scholarship funds are awarded to students entering in the fall semester.



Fellowships are obtained from foundation grants, private industry, or individual donors. Donors of fellowship funds sometimes place restrictions on the use of the funds as well as on the amount of awards. Fellowships are awarded primarily to second- and third-year students on the basis of professional promise. Most fellowship recipients are directly involved in one of the academic programs of the school.

Research assistantships are obtained primarily from grant and contract funds awarded to various faculty in the school. University-funded student grants are available for students who have sufficient experience to contribute to one or more ongoing research or academic programs.

Pursuant to the Tax Reform Act of 1986, students performing any services (whether degree related or not) required by their scholarship, fellowship or assistantship must have income taxes withheld. However, if the student anticipates no tax liability at the end of the calendar year, he or she can note "exempt" on the state and federal withholding forms and no taxes will be withheld. Income tax information is reported to the student by the University in January.

In all instances, admission to the school is a prerequisite for the award of assistance in any form. Students normally are offered awards for two years of study; however, the school has the right to examine the progress of each student to determine eligibility for continuation of the award in the second year.

It is the policy of the school to provide financial assistance through University sources for only two years. It is expected that professional students will have completed their degrees within this period of time, and graduate students will have obtained research grants to fund their study past the second year.

No student will receive financial aid while on probation. All returning students must complete the GAPSEAS form for each year of residence.

Eligibility for Financial Assistance

A significant portion of the financial assistance for students in the School of Forestry and Environmental Studies is provided by federal, Title IV funds. To qualify for such funding, usually in the form of assistantships, grants, and loans, students must sign the certificate of compliance regarding Selective Service regulations and must maintain satisfactory progress toward their degree.

The definition of "satisfactory progress" is based upon a combination of length of study in the school, number of units completed, and grades received. The Master of Forestry and Master of Environmental Management degrees must be completed within five years after the first date of matriculation. (Candidates for the A.M., M.S., and Ph.D. degrees should consult the bulletin of the Graduate School for comparable regulations.) During this time, the student must be enrolled for at least 9 units of credit each semester for the first four semesters and at least 3 units of credit per semester thereafter. Regulations concerning grades, stated elsewhere in this bulletin, are applicable.

Failure to maintain satisfactory progress will subject the student to probation or dismissal. A student on probation is ineligible for any form of financial assistance from the school until the terms of probation are removed.

SCHOLARSHIPS

University Scholarships. A limited number of scholarships are awarded each year to selected students who are pursuing either professional or graduate degrees. Awards are made on the basis of academic qualifications and professional or scientific promise. Stipends range from \$1,000 to \$6,000 for the academic year.

FELLOWSHIPS

Boise Cascade Corporation Fellowship. Fellowships are awarded each year to selected students who are pursuing a Master of Forestry degree in Forest Resource Manage-

ment. Preference is given to qualified minority or female students. The stipends range up to \$2,750 per year.

Champion International Foundation Fellowship. Fellowships are awarded each year to selected students who are pursuing a Master of Forestry degree. Stipends range up to \$1,500 per year.

Forestry and Environmental Studies Alumni Association Fellowship. Fellowships are awarded each year to selected students who are pursuing a Master of Forestry or a Master of Environmental Management degree. The students must have completed one year of graduate study. The amount of the fellowships is set at \$1,000 per year.

Daniel H. Gelbert and Associates Consulting Forestry Fellowship. A fellowship is awarded to a selected master's or Ph.D. degree candidate interested in the study of nonindustrial private timber holdings. The stipend is set at \$2,000 per year.

Leroy B. George Fellowship. A fellowship is awarded to a selected student from the Haywood or Buncombe counties or the Hendersonville, North Carolina, school systems. Second preference is given to a student from the southern Appalachian region. If a qualified student cannot be identified within the region the fellowship may be awarded to a student in the school who has a demonstrated interest in resource and environmental education and planning. The amount of the fellowship is set at \$1,000 per year.

Integrated Case Studies Fellowship. Fellowships are awarded to selected students who present appropriate case study proposals in applied ecology. Stipends range up to \$3,000 per year.

Andrew W. Mellon Foundation Fellowship. Fellowships are awarded each year to selected students pursuing master's or Ph.D. degrees. Stipends range from \$1,000 to \$5,000 a year.

Robert L. Smith Memorial Fellowship. A fellowship is awarded each year by the North Carolina Forestry Association to a selected student pursuing a Master of Forestry degree. The stipend is set at \$500.

Raymond E. Sullivan Memorial Fellowship. Fellowships are awarded each year to selected students pursuing master's or Ph.D. degrees. Stipends range from \$1,000 to \$7,000 per year.

Frederick K. Weyerhaeuser Forest History Fellowship. This fellowship is available campus-wide to graduate students who wish to study broadly in the area of forest and conservation history. The annual stipend is \$10,000. Inquiries should be made to the Forest History Society, 701 Vickers Avenue, Durham, NC 27701.

Union Camp Foundation Fellowship. Fellowships are awarded each year to selected students who are pursuing a master's degree in the Center for Resource and Environmental Policy Research. Stipends range up to \$1,500 per year.

Weyerhaeuser Foundation Fellowship. A fellowship is awarded each year to a selected woman or minority student interested in a career in industrial forestry. The stipend is set at \$3,500.

STUDENT GRANTS AND ASSISTANTSHIPS

Student Grants for the Master's Candidate. Student grants are awarded to graduate and professional students to assist faculty and staff with teaching, research, professional and other projects during the academic year. It is expected that students will spend no more than 10 hours a week on their assigned project; however, under special circumstances, students may be requested for as much as 20 hours of assistance per week.

The amount of the student grant is set in accordance with the length of the project. Student grants require a regular schedule for assistance to be arranged between the student and the faculty member to whom he or she is assigned.

Additional hours of assistance may limit the number of credit hours for which a student may register. Normally, students who receive student grants for 10 hours of assistance per week are limited to 12 units of credit per semester. Those who give 20 hours of assistance per week are limited to 9 units of credit. Exceptions require the permission of the student's adviser and the dean.

Most student grants are paid by the school through University scholarship funds in two equal amounts at the beginning of each semester. For the 1987-88 academic year, the basic student grant for 10 hours of assistance was \$2,000.

Normally, student grants are available only for the academic year and require full-time enrollment in the school. A few grants are available during the summer, however, for faculty research, staff, and Duke Forest assistance. Summer stipends are normally paid on a biweekly or monthly basis.

Student Grants for the Ph.D. Candidate. A selected number of Ph.D. candidates each year may be offered a financial aid package consisting of full tuition plus a monthly stipend. The tuition is a scholarship from University funds and is tax exempt. The monthly stipend (\$400 to \$650 per month in 1987-88) requires 720 hours of work for nine months (20 hours per week) during the academic year and is taxable. These graduate assistants may be retained by the faculty through research funding for the remaining three months of the summer.

Typically, the Ph.D. candidate is assigned to a member of the faculty to work on a particular research project under his or her direction and/or to provide teaching assistance. Furthermore, the research undertaken is normally a part of the student's graduate program and serves as a basis for the doctoral dissertation. With few exceptions, assistantships are available only for the first two years of graduate study.

Graduate assistants are required to maintain a regular schedule of work as determined by the faculty member to whom each is assigned. Those accepting graduate assistantships will be limited to 9 units of course work per semester. Exceptions require the approval of the major professor and the director of graduate studies.

Research Assistantships. Funded from grant and contract research under the direction of various members of the faculty, research assistantships provide support during the latter stages of study of the Ph.D. candidate. Typically, the research assistant completes one or more phases of a research project under the direction of the principal investigator, a member of the faculty. Normally, the research completed forms a substantial component of the requirements of the Ph.D. dissertation. However, in some instances this may not be the case and the students pursue dissertation research in a related area of study.

The level of service required of research assistants depends primarily on the nature of a particular research project and the availability of funds. Normally, research assistants are committed to 720 hours of service during the academic year (20 hours per week). Almost all research assistantships require full-time service during the summer. A regular schedule of research under the direction of the principal investigator must be maintained and the academic load is limited to a maximum of 9 units per semester. The research assistant who is retained for half-time service during the academic year and full-time service during the summer may earn from \$5,850 to \$9,750.

Work/Study. Work/study funds are administered for student employment through the dean's office as assistantships. Students in the school are not eligible for work/study jobs administered through the University's placement office and are not awarded work/study funds in financial aid packages. Students who anticipate the need for a work/study position should complete the GAPS FAS form at the time they accept admission. They must also sign a form certifying that they are not in default to any student

loan organization. Jobs are granted to those with established need and with the skill or training required by a professor for a particular type of teaching or research or by a staff member for a particular type of work. It is the responsibility of the student to inquire about jobs with individual faculty or staff and with the dean of the school. Work/study funds are taxable.

Application for Awards for the Entering Student

Application for awards may be made concurrently with the application for admission. Applicants should initiate the necessary action early to ensure that the required documents are filed with the school's Office of Admissions and Financial Aid on or before 15 February prior to enrollment. Applicants should:

1. Complete the Graduate and Professional School Financial Aid Service (GAPS-FAS) form, sent on request.
2. Furnish the following documents: (a) official transcripts of all previous college or university credits earned, (b) letters of reference from at least three persons familiar with the applicant's character, scholarship, and professional ability, and (c) scores from the aptitude test of the Graduate Record Examinations. Applicants should plan to take this examination in October at the latest. Documents offered in support of admission, if so designated, may also serve in support of the application for financial award.

Notification and Acceptance of Awards. Recipients of awards are notified in late March. Completed applications received after the 15 February deadline will be considered if vacancies occur at a later date.

Scholarships, fellowships, and the various categories of assistantships provide the basis for professional/graduate student support. Once offered by the University or the school, funds are committed to one student and are therefore unavailable to others. *As a consequence, it is the policy of the school that all awards offered can be declined prior to 1 April without prejudice. However, offers accepted and left in effect after 1 April are binding for both the student and the school.*

Loans

In terms of a needy student being able to afford the graduate program of his or her choice, federally insured student loans are often necessary and useful. Students should consider the nature of the loan and the positive and negative aspects of future loan payments, as well as investigate all other forms of financial assistance.

Federal law requires all students to have completed a financial analysis program, such as that provided by the Graduate and Professional Student Financial Aid Service (GAPS-FAS), to determine financial ability and independent or dependent status. Information and application material for GAPSFAS can be obtained by writing to the Educational Testing Service, Box 944, Princeton, New Jersey 08540.

No loan application will be processed without the GAPSFAS forms on file with the University.

Guaranteed Student Loans (GSL). All states have established guaranteed student loans for their own residents. Requirements vary concerning eligibility, amount that can be borrowed, residency requirements, and institutions at which the loans may be used. Students should inquire through their home state lending agencies for further information and GSL applications.

In all states, the GSL is a student loan for which the government pays the interest until six months following the graduation (or withdrawal) of the student borrower from the undergraduate or graduate institution. The limit for a GSL is \$7,500, with the interest rate set at 8 percent for new borrowers. The interest rate may be 7 to 9 percent if the student has previously borrowed from the same lending agency.

Students should send the completed GSL application to the school for certification of eligibility. In the rare case of a student who has difficulty in meeting state residency requirements because of a recent move, the student should write to the school's financial aid office for alternative lending agencies.

Students who borrow through the GSL program will be given entrance and exit interviews concerning the projected and actual costs of their loans. They will also be provided with information on loan consolidation, should this be desired or needed.

Perkins (National Direct Student) Loans. Loans through the Perkins program are administered through the University for students who qualify under the federal guidelines. The student must qualify as needy by the GAPSFAS form and in need of additional assistance beyond the maximum GSL allocation. The interest rate is 8 percent with payment on interest and principal deferred until six months following graduation.

Supplementary Loans for Students (SLS). With SLS, students who have borrowed the maximum amount through a GSL may borrow an additional amount up to \$3,000. Repayment of the principal is deferred but the interest must be paid on a quarterly basis. The amount of interest is based on the federal prime rate with 12 percent as the maximum allowed by law. Determination of need is based on the GAPSFAS form. Dependent students may have their parents or guardians cosign the loan.

SHARE Loans. Duke University participates in a private student loan program called SHARE (Supplemental Educational Loans for Families) which enables students to borrow up to \$15,000 per year to meet educational expenses. Repayment of the principal is deferred but the student must be able to pay the interest, which is based on the prime rate.

Unlike the federally subsidized loans, SHARE loans are available to students who do not qualify under federal guidelines, such as dependent students whose family income is greater than the federal limit, or independent students whose personal income for the previous year was too high to qualify for a federal loan. SHARE borrowers must have a cosigner (normally a parent or guardian) or be able to qualify as an independent borrower with an established credit rating.

SHARE loans may also be available to non-U.S. citizens if they can supply the necessary credit references or have the loan cosigned by a United States citizen.

Interested students should write directly to the school for further information.

Federal Grant Programs. Students with only three years of study at one of the institutions in the Cooperative College Program may be eligible for undergraduate state and federal grant programs. Such students should consult their undergraduate financial aid officers, state loan agencies, or federal granting agencies for applications, requirements, and restrictions.

Short-Term Loans. Short-term loans and emergency funds are available through the E. S. Harrar Fund at a 12 percent interest rate. Application for a loan is made at the school's Office of Admissions and Financial Aid, 203 Biological Sciences. The funds are disbursed by the school's accounting office, 213A Biological Sciences, which also arranges terms for repayment.

Student Life



Off-Campus Housing

Most of the students at the school join the annual scramble to find a place to live off campus. About one-sixth live in on-campus apartment complexes owned by the University and in the graduate residence halls.

The University is very much a part of the urban environment that is Durham, but the campus is not an urban one. It is not traversed by streets with housing and businesses. Consequently the perimeter of the West Campus is densely developed with apartment complexes, and the East Campus is adjacent to a neighborhood of large early twentieth-century homes, some of which have been converted to apartments. Free bus service is available between the two campuses.

In August and early September, the Department of Housing Management operates an off-campus housing service which consists of a staff person who maintains listings of apartment openings, house rentals, and "roommates wanted." The off-campus housing service does not rate the quality of apartments, houses, or landlords, nor arrange viewings. Similarly, the director of admissions in the School of Forestry and Environmental Studies maintains a listing of houses and apartments popular with students in the school as well as a list of entering students who are interested in finding roommates. These lists are mailed to students during late summer.

University Housing

Town House Apartments. Town House Apartments is a thirty-two-unit complex of one- and two-bedroom apartments which houses single graduate and professional students. The complex is situated between the East and West campuses. Some of the apartments are furnished for occupancy by two single students and the remainder for three single students with two students sharing the large bedroom. Town House Apartments have one and a half baths, a living room, and kitchen with dining area. Students must arrange for and pay for electricity, gas, and telephone. The complex is air conditioned and has a swimming pool, and is easily accessible to the campus bus line. These apartments are available for continuous occupancy, summer months included, if desired.

Central Campus Apartments. In 1974 the University opened a 500-unit complex, the Central Campus Apartments. Units are available for single and married students. For single students, fully furnished one-, two-, and three-bedroom units are available. Apartments for married students include a few furnished efficiencies and one-, two- and three-bedroom unfurnished units or units in which the living room and first bedroom are furnished. Married graduate students are given priority in these apartments. Because

of this and an expected turnover of about 25 percent annually, not all applicants may be accommodated at the time they desire. These units are available for continuous occupancy, summer months included, if desired.

Modular Homes. The University owns six modular homes which are located between East and West campuses. They are reserved for single students. These three-bedroom homes are equipped for three-person occupancy and have proved to be popular. They are usually reserved by students who have occupied other University accommodations during the previous academic year. Students arrange for and pay for electricity and phone.

Application and Residential Deposit. Application forms, housing information, and regulations governing the occupancy of rooms and apartments will be mailed when the Graduate School or School of Forestry and Environmental Studies has notified the Department of Housing Management of official acceptance of the student.

A residential deposit of \$100 must accompany the application form but does not guarantee a space. This deposit is held throughout the term of the original occupancy and any subsequent renewal. In addition to the \$100 residential deposit, a student currently residing in University housing and desiring to reserve accommodations for the next academic year or a shorter period must make a \$100 prepayment of housing fees to the Office of the Bursar. The bursar's receipt must be presented to the Department of Housing Management at the time the application is made. This prepayment is refundable if a student withdraws from the University; has an approved leave of absence prior to 15 August and notifies the Department of Housing Management at that time; or cancels the application on or before 15 July.

Housing fees for single students are payable for an entire semester unless special arrangements to pay on a different basis are made with the University bursar. Married students may make monthly payments as required by the terms of the lease. Housing costs are listed in the Financial Information section.

Additional payments above the rates for the academic year are required for students who must arrive earlier than the dates established for occupancy or remain later than the dates established for vacating University housing.

Roommate matching is done by the Department of Housing Management on the basis of several questions on the application form. Appeals for changing roommates are accommodated at the conclusion of a semester.

Services for Students

Medical Care. The main components of the student health service include the University Health Services Clinic, located in the Pickens Building on West Campus, and the University Infirmary on the East Campus. Emergency transportation, if required, can be obtained from the Duke campus police. The facilities of the University Health Services Clinic are available during both regular and summer sessions to all full-time students. The facilities of the University Infirmary are available only from the opening of the University in the fall until graduation day in the spring to all currently enrolled full-time students.

To secure the benefits of the student health service, a graduate student, during the term or semester in which the illness occurs, must (1) in the summer session term be registered for at least 1 unit of research or 3 units of course work; (2) be registered for at least 9 units per semester. The costs of student health benefits have been borne by tuition in the past, but are now separate and can be identified as a medical expense for tax purposes. The student health fee is nonrefundable after the first day of classes. Students are not covered during vacations, and their dependents and members of their family are not covered at any time.

The resources of the Medical Center are available to all students and their spouses and children. Charges for all services received from the Medical Center are the responsibility of the student.

The University has an Accident and Sickness Insurance Plan available for full-time students. Although participation in this plan is voluntary, the University expects all graduate students to be financially responsible for medical expenses above those covered by the student health service. Students who have medical insurance or wish to accept the financial responsibility for any medical expense may elect not to join the Accident and Sickness Insurance Plan by signing a statement to this effect. Each full-time student in residence must purchase this student health insurance or indicate the alternative arrangement.

The Student Accident and Sickness Insurance Plan provides protection twenty-four hours a day during the twelve-month term of the policy. Students are covered on and off the campus, at home, while traveling, and during interim vacation periods. For additional fees a student may obtain coverage for a spouse or spouse and children. Term of the policy is from opening day in the fall.

Coverage and services are subject to change as deemed necessary by the University.

Counseling and Psychological Services. CAPS provides a comprehensive range of counseling and psychological services to assist and promote the personal growth and development of Duke students. The professional staff is composed of clinical social workers, psychologists, and psychiatrists experienced in working with young adults. Among services provided are personal, social, academic, and career counseling. A number of short-term seminars or groups focusing on skills development and special interests such as coping with stress and tension, fostering assertiveness, enriching couples' communication, and dealing with separation and divorce are also offered. A policy of strict confidentiality is maintained concerning each student's contact with the CAPS staff. Individual evaluation and brief counseling/therapy as well as career and skills development seminars are covered by student health fees. There are no additional charges to the student for these services.

Appointments may be made by calling 684-5100 or visiting CAPS, 214 Old Chemistry Building.

Office of Placement Services. The Office of Placement Services, 214 Flowers, acts as a liaison between the University and potential employers. Students who wish to register with the office are offered an opportunity to assemble a dossier of academic records and recommendations in preparation for interviews and to have a permanent file for future reference. Interviews with representatives from industry and government are scheduled throughout the year for those students who have registered with the placement office. All services are offered without charge to students and alumni. In addition, the school maintains its own Office of Placement and Internship, 207 Biological Sciences. For further information, see the Placement section in this bulletin.

International Adviser. The International House handles governmental matters for students from abroad such as statements of attendance for home governments, issuance of United States immigration forms for re-entry into the country after a temporary absence, and required yearly extensions of time. Any new student who is not a citizen of the United States should report with passport to the international adviser soon after arrival. The International House is located at 2022 Campus Drive.

Other Services. The Bryan University Center houses an information desk, two drama theaters, a film theater, stores for books and supplies, meeting rooms, lounges, snack bars, and other facilities. A barbershop, hairdresser, post office, and bank are also located in the center and in the nearby West Campus Union.



Student Organizations and Activities

Sports. Students are welcome to use such recreational facilities as the swimming pools, tennis courts, golf course, track, jogging course, handball and squash courts, gymnasium, weight room, and playing fields. Intramural programs provide an opportunity to participate in informal and competitive physical activity. A variety of clubs for gymnastics, scuba diving, sailing, cycling, badminton, karate, rugby, soccer, and crew are also active.

FOREM. The FOREM Club is the student organization for coordination of the school's social functions and intramural team participation. Annual functions of the club include a Christmas party, Christmas tree sale, Field Day, and year-end banquet.

Student Advisory Committee. The Student Advisory Committee, an elected student group, meets regularly with the dean and faculty representatives to offer advice on courses and curriculum, programs, and long-range goals of the school.

Professional and Scientific Societies. Students are encouraged to participate in one or more professional or learned societies appropriate to their academic interest. Many of these societies are interested in participation by students and offer a lower fee to encourage student membership. A student chapter of the Society of American Foresters is active in the school.

Religious Services. Interdenominational services are conducted on Sunday mornings in Duke Chapel. Roman Catholic masses are offered daily on campus. Several Protestant denominations have student centers on campus. The Divinity School conducts other chapel services and religious and social activities. There is also a Hillel group which meets regularly.

Cultural Activities. Concerts, recitals, lectures, plays, films, and dance programs are presented frequently on campus. Information on major events is available at Page Box Office or the Bryan Center information desk. The University Museum of Art, which has some excellent permanent collections, is located on East Campus.

Academic Regulations



Planning

The responsibility for the specific content of the academic plan of study rests with the student. A thorough familiarity with and understanding of the regulations contained in this bulletin as well as other sources provided by the school are essential to sound planning.

During the fall term each student is assigned a permanent faculty adviser. The adviser should be consulted in planning a course of study. Other members of the faculty, particularly those concerned with the plan of study, should also be consulted on an informal basis. Reassignment to another adviser can be obtained, but only by written request to the faculty council.

Registration

Entering students who register for the Master of Forestry or Master of Environmental Management degree will receive instructions by mail from the School of Forestry and Environmental Studies a few weeks before the start of the fall term. Registration should be completed during the orientation week. Students in residence register for succeeding semesters at times scheduled in the University calendar.

Registration is approved by the adviser and processed by the school's director of admissions and by the University bursar. Registration is required in order to take courses for credit or audit. To establish eligibility for University housing, for University loans and some outside loans, for the student health service, and for study and laboratory space, a student must be registered. All tuition and fee payments and any indebtedness must be settled before registration will be completed.

Late Registration. All students should register at the times specified by the University. The charge for late registration is \$25.

Change of Registration. With approval of the adviser, the student can change registration for a period of ten days following the close of registration. A change of fees requires completion of a new fee sheet which is obtained from the school.

Refunds. Tuition refunds are governed by the policy stated in the chapter on Financial Information.

Graduate School Registration. Students in A.M., M.S., or Ph.D. degree programs register through the director of graduate studies of the Department of Forestry and Environmental Studies. Registration requirements and procedures are described in the section on graduate degrees of this bulletin and in the bulletin of the Graduate School.

Reciprocal Agreements. Students enrolled full-time in the School of Forestry and Environmental Studies or in the Graduate School during the regular academic year may be admitted to a maximum of two courses per semester at the University of North Carolina in Chapel Hill, North Carolina State University in Raleigh, or North Carolina Central University in Durham. Similarly, graduate students in these schools may take up to two courses per semester at Duke. Students may also take summer courses at one of the reciprocating universities; however, they must also be registered for at least 1 unit of summer credit at Duke.

Immunization Requirement

The North Carolina immunization law requires students entering a college or university in the state to be immunized against the following diseases: measles, rubella, tetanus, diphtheria and, in some cases, polio. Each entering student is required to present proof of these immunizations in accordance with the instructions contained in the Student Health Services form provided with the student's matriculation material. This form should be completed and returned to Student Health Services prior to the student's first day of classes. Duke University cannot permit a student to attend classes unless the required immunizations have been obtained.

Courses

Course Descriptions. All courses to be offered at any time by the school are described in the final section of this bulletin. However, courses are subject to change. A list of courses to be offered during a particular term, as well as schedules of courses offered in other departments at Duke and at neighboring universities, are available from the director of admissions prior to registration for that term.

Independent Study. All students are expected to place increasing emphasis on independent study as they near completion of residence. FES 299 lists a number of independent project areas. Several students can work together under the supervision of a faculty member by registering for FES 200.

Master's Project. All students must complete a master's project of 4 to 6 credits. The project should be identified during the first term of study and initiated during the second term. No student will be permitted to register for the third term of study until a project proposal has been approved by the student's adviser and has been received in the dean's office. During the final two terms major emphasis should be placed on the project. In completing the project, the student applies theoretical and analytical training acquired during the two years of study on actual natural resource or environmental problems. If desirable, arrangements can be made by the student or the school for consultation with other organizations concerning the scope and objectives of the project.

Students maintain close contact with their advisers during the development and writing of the master's project. Projects should reach final stages of completion by midterm of the final semester in residence. *One copy of the project, approved by the adviser, must be delivered to the dean's office by 1 November for those graduating in December, by 1 April for those graduating in May, and by 1 August for those graduating in September.* The adviser is responsible for critical assessment and grading.

Auditing. Students registered for a full course load may audit courses free of charge. Otherwise, the audit fee is \$115 per course during the fall and spring and one-half of tuition during the summer. Written permission of the instructor prior to registration for the course is required. Audited courses must be so indicated on the registration card. In classes where enrollment is limited, students enrolled for credit will receive priority. Audited courses are recorded without grade on the student's permanent record card.

Regular attendance is expected. Changes from audit to credit are not permitted after the drop/add period.

Dropping and Adding. The period for dropping and adding courses is limited to the first ten calendar days of the fall and spring semesters. During the summer, dropping or adding of courses is limited to the first three days of the term. Students are advised to make all class changes on the first day of class if at all possible. *Except under unusual circumstances, and with special permission of the dean, no reduction of tuition and fees is permitted unless classes are dropped on the first day of the drop/add period.*

For the special intensive courses, registration may be changed from one intensive course to another course of equal credit after the close of the drop/add period. However, there may be no change in the number of semester hours or in fees.

Retaking Courses. Courses required as a part of the program elected by the student or required by the adviser must be retaken if failed. Courses prerequisite to more advanced courses the student wishes to elect must be retaken if failed. Elective courses may be retaken if the student wishes to do so. See the section on grades, below, for additional information.

Credit Hours

Candidates for the professional degrees are considered fully registered when they enroll full-time for the number of semesters required in their individual degree programs. The normal registration to reach the required minimum units of credit is 12 units per semester, although a variation from 9 to 15 units is common. Students must have the permission of their adviser and the dean to register for more than 15 units in a semester, and all students who wish to enroll for fewer than 9 units must make a formal request to study part-time.

Summer Registration. Professional degree candidates are normally not required to register for summer courses. However, a student who wants to supplement his or her graduate work with courses during the summer may do so through the Duke University Summer Session office. The cost is at the part-time rate per unit, and a summer health fee is assessed for students working on campus. Students in the one-year degree option who have completed two semesters of residence and all courses except the master's project register through the school's admissions office and pay a minimal fee. Summer registration does not affect the number of units, semesters in residence, or flat-fee tuition for the regular academic year.

Grades

The grading system used in the School of Forestry and Environmental Studies and the Graduate School is as follows: *E* (exceptional); *G* (good); *S* (satisfactory); *F* (failing); *I* (incomplete); *Z* (continuing).

The grades of *P* (pass) and *F* (fail) are used in the School of Forestry and Environmental Studies for seminars and modular courses. At the instructor's option, the grades of *P* or *F* or regular letter grades are used for intensive courses, independent projects, and master's projects. The grade of *Z* is assigned for an independent project or a master's project which extends over a period of more than one semester; a final grade is given upon completion of the project. Credit hours for a course completed on a pass/fail basis are creditable toward the master's degree as long as the course is not required in the student's major area of study. Permission for the pass/fail option must be obtained in writing from the instructor upon registration for a course.

Incomplete Grades. A grade of *I* indicates that some portion of the student's work is lacking, for an acceptable reason, at the time grades are reported. Requirements of



all courses in which a grade of Incomplete is assigned by an instructor must be fulfilled within one calendar year following the date of the assignment of the incomplete grade. If the student fails to complete the requirements within one calendar year, the *I* grade will be changed to a grade of *F*.

In exceptional circumstances, upon recommendation of the professor who as signed the grade of Incomplete, the faculty council may extend the time for completion of the course requirements. If, in the judgment of the professor and the student's adviser, completion of the requirements is not a reasonable alternative for the student, the student may petition the faculty council to allow the grade of *I* to stand permanently on his or her record. Action to allow the *I* to stand permanently must be initiated prior to the time that a grade of *F* is recorded (i.e., within one calendar year). No student will be allowed to graduate with an Incomplete unless permission has been granted for it to stand permanently on the record.

Failure. Any course for which a failing grade is received must be retaken or replaced with a substitute course. A substitute course requires the approval of the student's adviser and the faculty council. Both the original failing grade and the grade received for the retaken or substitute course will appear on the student's transcript. Failure of a course also subjects the student to dismissal (see the sections on probation and dismissal and automatic dismissal).

Probation and Dismissal. Students are subject to dismissal from the school under any one or a combination of the following factors:

1. no grades higher than *S* during the first semester of study;
2. less than 6 units of *G* and/or *E* grades during the first full year of study;
3. a grade of *F* in any course at any time.

An appeal may be submitted through the adviser to the faculty council to continue study under a probationary status. Probationary terms, set by the adviser, must be specific in the appeal and the appeal must be approved by the faculty council. If probationary terms are met, the student will be returned to regular status. If probationary terms are not met, the student will be dismissed. Students will not be awarded degrees while on probationary status.

Automatic Dismissal. A student is automatically dismissed upon failure of more than one course.

Academic Irregularities

All cases falling outside the regular policies and procedures of the school are referred to the faculty council for decision. The work of the council includes review and decision regarding course requirements for graduation, student probation and withdrawal, student petitions for waivers of degree requirements, and all actions which deviate from established academic regulations.

A student who desires to petition the council should do so in writing to the chairman. A precise statement of the reason for the request is required. The student will be notified in writing of the decision of the council by the chairman.

Transcripts of Credit

A student who is registered for a course and who successfully completes the requirements as prescribed by the instructor receives credit on the records of the school. Official transcripts of credit are issued only by the University Registrar, 103 Allen Building. Requests for transcripts, sent directly to the registrar, should state clearly the full name under which the work was taken, the dates of attendance, and to whom the transcripts are to be sent. The student must sign the request for release of a transcript. The cost of

a single transcript is \$2, payable in advance. Additional copies to the same address are 50 cents each. No transcripts will be issued for students who fail to clear all financial obligations to the University upon graduation.

Length of Study

For a full-time student entering without an undergraduate degree in forestry or environmental studies, the normal time for completing the master's degree is four semesters. No student, either full-time or part-time, is allowed more than five years to complete the requirements for the master's degree.

Leave of Absence or Withdrawal

Occasionally, special circumstances require a student to leave the University for one or two semesters at a time. If the reason for the departure is considered an emergency, the student may request a leave of absence for a period not to exceed one year. If the reason is to study elsewhere in a combined degree program, a leave will be granted for the length of study. If the student plans to do field studies or an internship, he or she must maintain University enrollment by paying a registration fee each semester of the academic year until full-time study is resumed.

Under all circumstances, the student must request the leave for a specific length of time prior to departure from the University. Extensions must be requested if they are required. Failure to request a leave or an extension of leave may result in dismissal from the University. A student is eligible to request a leave of absence only after having completed at least one semester of study.

A student who wishes to withdraw must make a written request to do so. For refunds upon withdrawal, see the chapter on financial information.

Application for the Degree

Even if degree plans are tentative, a candidate for a degree must file an application for the degree no later than the end of the sixth week of the semester in which the degree is to be received. For a degree to be awarded in September, application must be filed no later than the beginning of the second summer session. The application for the degree is valid only for the semester in which it is filed. If the student does not receive the degree as expected, he or she must file a new application.

All candidates are urged to attend the commencement exercises at which their degrees are to be awarded. A student who is unable to attend is required to file a petition with the dean, not later than four weeks prior to commencement, seeking permission to receive the degree in absentia.

Debts

Students are expected to meet all financial obligations to the University prior to completion of the degree. Failure to pay all University charges by the due dates specified by the University will bar the student from registration, class attendance, receipt of transcripts, certification of credits, leave of absence, or graduation until the account is settled in full. Further, an individual in default may be subject to withdrawal from the University.



Courses of Instruction



Course offerings are subject to change. The student should consult the current University course schedule for listings of courses to be offered each semester.

Introductory Courses

191, 192. Independent Study in Forestry and Environmental Studies. Directed reading and research. Open to qualified students in junior and senior years by consent of the student's department in Trinity College and of the School of Forestry and Environmental Studies. Units to be arranged. Fall, spring, summer. *Staff*

194. Conserving Natural Resources. Fundamentals of natural resource development, use, management, and protection based on principles of the natural and social sciences. Open only to undergraduates. 3 units. Spring, on demand. *Staff*

Forest Resource Management

204. Forest Inventory, Growth, and Yield. Measurement of land and forests for purposes of management, appraisal, purchase, and sale. Techniques for predicting the growth and future yield of stands by various methods. 3 units. Fall. *Davison*

205. Silviculture. Consideration of the decision-making process by which prescriptions are formulated for regeneration, tending, and harvesting of forest stands. Biological factors underlying stand manipulation are stressed and economic, harvesting, and utilization variables are discussed as appropriate. Emphasis on principles and techniques that transcend vegetation types or geographic regions. 4 units. Spring. *Oren*

207. Forest Pest Management. Fundamentals of entomology and plant pathology as appropriate to understanding the impacts of insects and diseases on forest productivity and their assessment for integration into forest management. Regional case examples and complexes are evaluated in terms of pest-population, forest-stand dynamics; economic and societal constraints; treatment strategies; monitoring systems; and benefit-cost analysis. This approach seeks to develop predictive capabilities in long-range pest management and decision making. Laboratory is largely field oriented to focus on diagnostics and impact analysis. 3 units; 4 units with laboratory. Fall. *Stambaugh*

208. Fire Behavior and Use. Impacts of destructive agents upon forests; principles of combustion, fire behavior, danger measurement and suppression; use of fire in forest management. 3 units. Spring. *Staff*

210. Forest Pathology. Diseases of North American forests and their timbers, with emphasis on current literature and management strategies. Field and laboratory diagnosis. 3 units; 4 units with laboratory. Offered on demand. *Stambaugh*

221. Forest Soils. Introduction to soil resources and the interactions of forest production, management, and soil fertility. Topics include soil chemistry, physics, development, and nutrient cycling, all from the perspective of maintaining and improving forest productivity. 3 units. Spring, odd-numbered years. *Richter*

260. Western Field Trip. One-week trip to observe land management and utilization practices in the western United States. Exposure to ecological, economic and policy issues, as well as watershed, wildlife and land-use questions. 1 unit. Spring. *MacKinnon*

261. Remote Sensing for Resource Management. An examination of remote sensing systems as sources of information in resource management with an emphasis on aerial photography and multispectral scanners. Emphasis on the interpretation of airborne and space imagery. 3 units. Spring. *Davison*

262. Forest Utilization. Introduction to utilization in the managed forest and the principal wood-using industries. Taught as a one-week field seminar. May be taken by non-forestry majors. 1 unit. Spring. *Staff*

263. Harvesting and Transportation Systems. Analysis of cable, tractor, and aerial harvesting systems. Sawlog and pulpwood transportation. Emphasis on material flow, inventory control. Application of simulation and optimization methods to harvesting, loading, and transport. 3 units. Offered on demand. *Jayne*

264. Manufacturing Systems. Study of material processing in sawmills, pulpmills, plywood plants, and composite board manufacturing facilities. Emphasis on material flow, quality control, inventory control. Application of quantitative methods and economic analysis to forest product manufacturing operations. 3 units. Offered on demand. *Jayne*

301. Forest Nutrition Management. Basic processes of soil chemistry and ecosystem nutrient cycling as regulators of forest production. Management impacts such as fertilization, fire, harvest, and biological nitrogen fixation. Laboratories include methods of determining site fertility, assessing forest productivity, and using computer simulation models to guide management decisions in forest nutrition programs. 4 units. Offered on demand. *Staff*

305. Harvesting Effects on Productivity. Impacts of harvesting on the residual stand, soil properties, water quality, and future site productivity. The integration of harvesting into overall stand management through a full rotation is stressed. 2 units. Fall, on demand. *Davison*

307. Ecophysiology of Productivity and Stress. Exploration of principles governing stand growth and its response to a variety of stresses. Emphasis on climate, soil resources, and competition. Stresses and their reliefs as modifiers of either the availability of resources or the physiological properties of trees. 3 units. Fall. *Oren*

308. Tree Biology. Life processes and properties of trees, including anatomy, physiology, and chemistry. Focuses on the tree as an integrator of ecological site factors in the production of value from the forest. 2 units. Offered on demand. *Staff*

309. Forest Regeneration. Natural and artificial means of creating new forest stands of desirable quality and stocking. Biological, economic, and technical factors are considered. Prerequisite: 205. 2 units. Offered on demand. *Staff*

322. Microbiology of Forest Soils. Ecology of the microbial populations of forest soils, with emphasis on rhizosphere interactions, root pathogenesis, and mycorrhizae. Prereq-

quisite: consent of instructor; mycology and bacteriology are recommended. 4 units. Offered on demand. *Stambaugh*

361. Forest Resource Management. The integration of biologic, socioeconomic, and environmental constraints in planning, organizing, and managing forest properties for maximizing production of timber and other benefits. Emphasis on analysis of growth and yield for regulation of growing stock; application of economic imperatives in decision making, including valuation of forest land and related resources; and use of microcomputers in simulating management options. Students develop and present a viable management plan for a portion of the Duke Forest. Prerequisites: 204, 205. 4 units. Spring. *Parks*

367. Seminar in Forest Resource Management. Examination of concepts, practices, and policies employed in the management of industrial and public forests; discussion of the problems of large-scale forest management. Offered since 1985-86 as the Laird, Norton Distinguished Visitor Series. 1 unit. Spring. *MacKinnon*

Resource Ecology

211. Applied Ecology and Ecosystem Management. An application of ecological principles to applied resource and environmental problems with an emphasis on the ecosystem as a basic working unit. Perspectives include such topics as land/water interactions, the patchiness concept, succession, energy flow, productivity, mineral cycling, perturbation effects on ecosystems, and limiting factors. Laboratory studies will focus on the team approach to analyzing the biotic and abiotic components of the ecosystem and impact analysis. 4 units. Fall. *Richardson*

213. Forest Ecosystems. Introduction to basic processes regulating ecosystem development, structure, and function leads to examination of ecosystem concepts and the effects of management activities on ecosystem processes and patterns. Elective laboratory, taught as FES 214, introduces field aspects of forest ecology. 3 units. Fall. *Richter*

215. Environmental Physiology. Examination of the concepts of tolerance, limiting factors, bioenergetics, nutrition, stress physiology, homeostasis, and alleopathy for both plant and animal life. Discussion of procedures for and examples of monitoring physiological perturbations due to resource manipulation. 3 units. Spring, even-numbered years. *Richardson and Di Giulio*

216. Applied Population Ecology. Discussion of population dynamics of natural and exploited populations. A quantitative approach with an emphasis on mathematical models and their application to population problems. 3 units. Spring, odd-numbered years. *Maguire*

218. Barrier Island Ecology. Adaptation of plants to barrier island migration and other physical characteristics of the coastal environment. Major emphasis will be placed on management of barrier beaches from Maine to Texas and the impact of human interference with natural processes. Field studies. Prerequisite: course in general ecology. Offered at the Duke Marine Laboratory, Beaufort, North Carolina. C-L: Botany 218 and Marine Sciences 218. 6 units. Summer, term 1. *Staff*

266. Ecology of Southern Appalachian Forests. One-week introduction to forest ecosystems in the southern Appalachians, including species identification, major forest types, patterns in ecosystem distributions, and effects of human activities. 1 unit. Fall. *Staff*

267. Wildland and Wildlife Management. Overview of wildlife management in relation to land use, properties of wildlife populations, elements of game range, manipulation of food and cover, agencies involved in wildlife conservation, and the role of public and political involvement. 3 units. Spring, on demand. *Staff*

311. Ecological Toxicology. Study of environmental contaminants from a broad perspective encompassing biochemical, ecological, and toxicological principles and methodologies. Discussion of sources, environmental transport and transformation phenomena, accumulation in biota and ecosystems. Impacts at various levels of organization, particularly biochemical and physiological effects. Prerequisites: organic chemistry and vertebrate physiology or consent of instructor. 3 units. Fall. *Di Giulio*

312. Wetlands Ecology. The study of bogs, fens, marshes, and swamps. Emphasis on processes within the ecosystem: biogeochemical cycling, decomposition, hydrology, and primary productivity. Ecosystem structure, the response of these systems to perturbations, and management strategies are discussed. A research project is required. Prerequisites: 211 or equivalent and consent of instructor. 3 units. Spring, odd-numbered years. *Richardson*

314. Integrated Case Studies in Toxicology. Students are assigned topics relative to their chosen research discipline in toxicology and are asked to develop case studies to present at a roundtable workshop. Emphasis on review and analysis of toxicological problems from a holistic (multidisciplinary) viewpoint. 1 unit. Spring, on demand. *Richardson*

316. Case Studies in Environmental Management. Introduces an integrated ecological, economic, and sociopolitical approach to solving resource management problems. Students work in groups to analyze local problems and present their results. Emphasis on setting goals for research, project organization, selection of quantitative tools, preparation of written and oral presentations. Prerequisites: 211 and 251 or equivalents. 4 units. Spring. *Staff*

318. Seminar in Ecotoxicology. Discussion of current topics concerning environmental contaminants. Individual students review a chosen topic and lead subsequent discussion. Guest speakers. 1 unit. Spring. *Di Giulio*

325. Ecologic Effects of Acidic Deposition. Impacts on both terrestrial and aquatic ecosystems are examined by reviewing key chemical processes, evaluating case studies, reviewing current literature and research projects, and through discussions with visiting experts. 3 units. Spring, even-numbered years. *Staff*

Water and Air Resources

230. Weather and Climate. Overview of the science of meteorology and principles of climatology, especially as applied to problems in ecology and natural resource management. Emphasis on the processes and characteristics of weather phenomena and local and regional climates. General introduction to sources of climatic data and climatic data analysis. Includes laboratory. 4 units. Fall. *Knoerr*

231. Environmental Climatology. Applications of climatology to solving problems in the areas of applied ecology; land use planning; forest, water resource, and air quality management. History of the atmosphere and world climates is considered to provide a perspective on current conditions. Impact of weather on human behavior, property, and natural resource management. 3 units. Spring, on demand. *Staff*

232. Microclimatology. Introduction to the micrometeorological processes. Discussion of the integration of these processes and the resulting microclimates in the rural (forest, field, and water surface) and urban environments. Methods for modification of the microclimate. 3 units. Spring, on demand. *Knoerr*

234. Watershed Hydrology. Introduction to the hydrologic cycle with emphasis on the influence of land use, vegetation, soil types, climate, and land forms on water quantity and quality and methods for control. Development of water balance models. Anal-

ysis of precipitation patterns, rainfall and runoff, and nonpoint source impacts. Statistical handling and preparation of hydrologic data, simulation and prediction models, introduction to groundwater flow, laboratory and field sampling methods. 4 units. Fall. *Marin*

236. Water Quality Management. Types, sources, and effects of pollutants. Water quality standards and criteria. Engineering approaches to water management. Mathematical models and their application to water quality management. Federal regulations, in particular, the Federal Water Pollution Control Act amendments of 1972 and 1977. Economic and policy analysis for water quality management planning. 4 units. Fall. *Reckhow*

237. Watershed Modeling. Analysis of models for individual hydrologic processes. Evaluation of management-oriented watershed models based on the hydrologic process models. Simulations with watershed models as a basis for management decision making to optimize water yield quantity, timing or quality under various vegetative, climatic, topographic, and soil conditions. Prerequisite: 234. 3 units. Spring. *Knoerr and Marin*

330. Environmental Monitoring and Instrumentation. Methods of measuring and monitoring the earth's physical environment with emphasis on water and air resources. Characteristics and uses of contemporary sensors, measurement and data acquisition systems. Methods of obtaining and processing computer compatible data records. Includes laboratory. 4 units. Spring, on demand. *Knoerr*

331. Water Resource Systems. Introduction to the fundamentals of water resource systems planning and management. Emphasis on optimization, simulation, statistical, and economic principles for management of surface and subsurface water resources. Topics include project selection and evaluation, design of standards and regulations, stochastic and deterministic quantity/quality simulation models, water supply and waste water treatment technologies, decision and risk analysis. 3 units. Spring. *Marin*

332. Air Quality Management. Types and sources of atmospheric contaminants including effects of industry, urban development, farming and forestry practices, and recreation. Meteorological effects on air quality. Determination of air quality trends and the application of management systems from a meteorological point of view. Types and applications of air quality models. Performance of air quality models under various emission sources, meteorological, and topographic conditions. 3 units. Fall, on demand. *Staff*

335. Water Quality Modeling. Development and evaluation of simulation models of surface water quality. Mechanistic descriptions of aquatic ecosystems and materials transport. Parameter estimation. Methods of solution, including uncertainty analysis. Prerequisites: 234, 236, 350, 355. 3 units. Fall, odd-numbered years. *Reckhow*

Quantitative Methods

251. Natural Resource Data Analysis. Elements of statistical inference and estimation, including exploratory data analysis, regression, analysis of variance. 3 units. Fall. *Wilkinson*

302. Models in Forestry. Students learn how to develop and choose models for use in forestry decisions, analyze the results, evaluate validity and utility, and interpret models developed by others. Emphasis on using models to develop strategy and evaluate policy for culturing forests and related ecosystems. Subjects include timber, wildlife, water, recreation and cash flow. 3 units. Fall. *Boyce*

350. Applied Regression Analysis. Regression analysis with nonexperimental data using ordinary least squares. Emphasis on assumption violations: consequences and correctives. Analysis of variance and time series analysis using Box-Jenkins methods as

time permits. Applications to problems in natural resource management. Prerequisite: 251 or equivalent. 4 units. Spring. *Reckhow*

355. Optimization Methods for Resource Management. Introductory survey of optimization techniques useful in resource management and environmental decision making. Numerical techniques for unconstrained optimization, linear programming, dynamic programming, and optimal control methods. Prerequisite: consent of instructor. 3 units. Fall. *Staff*

357. Systems Ecology and Modeling. Concepts of systems analysis and simulation modeling in ecology. Examples emphasize use of systems analysis and modeling to solve environmental management problems. Prerequisites: ecology, introductory statistics, computer programming on microcomputer and TUCC; additional quantitative background desirable. 3 units. Spring, even-numbered years. *Maguire*

385. Decision Theory and Risk Analysis. Bayesian decision theory, including probability, subjective probability, utility theory, value of sample information, and multiattribute problems. Behavioral decision theory. Applications of decision theory in resource and environmental policy making. Prerequisite: 251 or equivalent. 3 units. Spring, even-numbered years. *Reckhow and Maguire*

Resource Economics and Policy

269. Business Aspects of Natural Resources. Introduction to various business and financial aspects crucial to decision making in the management of natural resources. Specific topics include concepts of managerial accounting, corporate financial statements, measurement and projection of business results, sources of funds and analysis of capital investment decisions, risk and uncertainty in decision making, and survey of computer models used in these areas. Applications in public and nonprofit sectors. Extensive use is made of case studies, problem solving, and group discussions. Prerequisite: 270. 3 units. Fall. *MacKinnon*

270. Resource Economics and Policy. The application of economic concepts to private and public sector decision making concerning natural and environmental resources. Investment analysis, benefit-cost analysis. Planning and policy concepts. Prerequisite: introductory course in economics. 4 units. Spring. *Hyde*

283. Environmental Policy and Values. Discussion of varying philosophical approaches to the allocation and use of natural resources and the environment. Views espoused by ecologists, preservationists, naturalists, conservationists, economists, planners, theologians, lawyers, and political scientists are considered. Through extensive readings, students consider who values what in society, and who gets what, when, and how. Prerequisite: consent of instructor. 3 units. Fall. *Staff*

285. Land Use Principles and Policy. Consideration of four major roles of land in the United States: as a producer of commodities, financial asset, component of environmental systems, and location of development. Analysis of market allocation of land, market failure, role of public planning and regulation. 3 units. Fall. *Healy*

363. International Trade and Forest Investment. Overview of world trade patterns in both raw and manufactured forest products in the context of international trade theory. International trade and foreign investment policies affecting natural resource based activities. Long- and short-term supply and demand outlooks for the major producing, potentially producing, and consuming nations are considered in terms of natural resource endowment and investment efficiency. International efforts to develop worldwide supply-demand equilibrium models for forest products. 3 units. Spring, on demand. *Yoho*

372, 373. Advanced Natural Resource Economics. Survey of advanced topics in natural resource and environmental economics. Emphasis on renewable resources and public policy. Prerequisite: consent of instructor. Two courses, 3 units each. Fall and spring. *Hyde*

381. Natural Resource Policy. An examination of institutions and processes in the public sector that influence natural resource allocation and use of the environment. Emphasis on political allocation of resources, especially legislative and administrative processes. Topics include the roles of democracy and free enterprise, lobbying, public participation, planning, and advocacy. Prerequisite: consent of instructor. 3 units. Spring. *Staff*

382. International Environmental Problems. Global and transboundary issues; management of international disputes. Environmental consequences of Third World development, including industrial pollution, rural land degradation, deforestation, misuse of chemicals, reduction of biodiversity. Comparative analysis of policies. 3 units. Spring. *Healy*

388. Seminar in Resource and Environmental Policy. Discussion of the political, legal, and socioeconomic aspects of public and private action in environmental quality control and management. Prerequisite: consent of instructor. 1 unit. Fall, spring. *Staff*

389. Seminar in Forest and Conservation History. Evolution of resource agencies, forest industries and associations, and conservation/environmental organizations. Public policies for land and resources are compared with priorities and constraints in the private sector. Prerequisite: consent of instructor. 2 units. Spring, odd-numbered years. *Steen*

Intensive Courses

258. Forest Appraisal. Presentation of the principles of real estate appraisal as they apply to valuation problems in forestry. Consideration of appraisal theory, accounting and tax concepts in forest land management. Application of financial analysis techniques to forest land management through lectures and problem-solving sessions. 3 units, intensive. Fall. *Sizemore*

259. Elements of Forestry. Introduction to forestry topics in biological, economics, policy and management arenas. Multiple use is stressed. Field trip to view silviculture, forest management and harvesting operations. 1 unit, intensive. Spring. *MacKinnon*

268. Resource Management and Business Practices. Presentation of various aspects of managerial accounting and financial analysis crucial to decision making in the management of natural resources. Consideration of corporate financial statements, sources and uses of funds, breakeven analysis, measurement and projection of business results. Applications in public and nonprofit sectors. 1 unit, intensive. Fall. *MacKinnon*

281. Environmental Law. Examination of contemporary environmental law and its common law antecedents in the context of the American legal system. Objectives are to provide basic training in analyzing cases and statutes, applying knowledge in a classroom setting, and using a law library. Open to professionals and Senior Professional Program candidates only. 1 unit, intensive. Spring. *Heath*

288. Forest Taxation. Review of the principles of timber taxation as applied to forest management, including income (capital gains), estate and property taxation. Types of timber transactions discussed include outright sales, cutting contracts, and leases under the law as amended by the 1986 Tax Reform Act. Proper treatment of expenses, depletion basis, and casualty losses are considered. Emphasis on solution of practical problems using actual reported cases. 1 unit, intensive. Fall, spring. *Condrell*

306. Dynamic Modeling of Forest Management Strategies. Simulation of the financial aspects of silvicultural practices when used to produce timber, wildlife habitat, water, range, and recreational benefits; economics of production; and trade-offs for multiple benefits. Students use actual forest inventories to devise silvicultural strategies, which are simulated with the system dynamics models DYNAST and STELLA on microcomputers. 1 unit, intensive. Fall. *Boyce and Easterling*

310. Hazardous Waste Management: Regulations, Policies and Implementation. Overview of the nation's hazardous waste management programs, the Resource Conservation and Recovery Act regulatory program and the Superfund toxic site clean-up program. Focus on application and implementation. 1 unit, intensive. Spring. *Davidson*

366. Mathematical Modeling of Lake and Reservoir Water Quality. Practical application of mathematical models of lake and reservoir water quality. The major objective is to expose the participant to a wide variety of techniques that are useful in predicting the responses of lakes and impoundments to pollutants. Statistical and mass balance models are included. Knowledge of elementary calculus and statistics is recommended. 1 unit, intensive. Fall. *Reckhow and Chapra*

370. Economics of Intensive Forestry. Analysis of investment in intensive forestry and comparison of alternative uses of land and capital. Methods commonly used to determine financial returns: financial maturity, present net value, internal rate of return, cash flow and benefit-cost calculations. 1 unit, intensive. Spring. *Vasievich*

375. Timberland Investment Analysis. Investment characteristics of timberlands, particularly with reference to institutional investors. Consideration of investment objectives (preservation of capital, return on investment, liquidity) and constraints (taxes, accounting conventions, legal requirements). 1 unit, intensive. Spring. *Mason and Howard*

376. USDA Forest Service Inventory Data: Content and Use. Introduction to means of applying inventory data to particular problems. How data are processed, stored and distributed. Validity, limitations and retrieval of data are described. 1 unit, intensive. Fall. *Boyce*

384. Special Tax Problems for Industrial Timberland Owners. Current problems of industrial timber taxation. Various topics are considered, depending upon developments of interest to industrial owners and students of industrial forestry. Past topics have included use of subsidiaries, Internal Revenue Service audits, valuation and financing of land and timber transactions. Prerequisite: 288 or equivalent experience. 1 unit, intensive. Fall. *Condrell*

386. Natural Resource Problem Solving: Developing "People Skills." Course designed to improve the management skills of the participants. Emphasis on identification of problem type (planning problem, decision problem, or cause and effect analysis) and application of appropriate solution processes. Focus on participatory management, communication skills, and time management/stress management concepts. 1 unit, intensive. Fall. *Banzhaf*

Special Studies and Projects

200. Student Projects. A group of five or more students may plan and conduct their own research project on a special topic, not normally covered by courses or seminars. A request to establish such a project should be addressed to the faculty council with an outline of the objectives and methods of study and a plan for presentation of the results to the school. The faculty council will designate the units to be earned and a faculty member for the evaluation and grading of the work of each participant. Fall, spring, summer.

201. Field Studies. Visits to and studies of resource use and management areas and activities outside the University. Variable registration fee. Units to be arranged. Fall, spring, summer. *Staff*

299. Independent Projects. Directed readings or research at the graduate level to meet the needs of individual students. Units to be arranged. Fall, spring, summer. Students should register for the course number listed below for the supervising faculty member.

299.2 <i>Boyce</i>	299.17 <i>Reckhow</i>
299.3 <i>Bentley</i>	299.18 <i>Richardson</i>
299.4 <i>Alig</i>	299.19 <i>Richter</i>
299.5 <i>Davison</i>	299.20 <i>Sizemore</i>
299.6 <i>Di Giulio</i>	299.21 <i>Parks</i>
299.7 <i>Dutrow</i>	299.22 <i>Stambaugh</i>
299.10 <i>Heath</i>	299.23 <i>Steen</i>
299.11 <i>Hyde</i>	299.27 <i>Christensen</i>
299.12 <i>Jayne</i>	299.28 <i>Condrell</i>
299.13 <i>Knoerr</i>	299.29 <i>Vesilind</i>
299.14 <i>Marin</i>	299.30 <i>Healy</i>
299.15 <i>Maguire</i>	299.31 <i>MacKinnon</i>
299.16 <i>Dieter</i>	299.33 <i>Oren</i>

398. Program Area Seminar. Required seminar in each of the four program areas. Students present master's project research. 1 unit. Spring. *Staff*

399. Master's Project. An applied study of a forestry or environmental management problem or a theoretical research effort. A seminar presentation of the objectives, methodology, and preliminary findings is required. A written (or other medium) report at the conclusion of the project is also required. Units to be arranged. Undertaken with the guidance of the student's adviser. Fall, spring, summer.

Numerical Listing of Courses

- 191,192. Independent Study in Forestry and Environmental Studies
- 194. Conserving Natural Resources
- 200. Student Projects
- 201. Field Studies
- 204. Forest Inventory, Growth and Yield
- 205. Silviculture
- 207. Forest Pest Management
- 208. Fire Behavior and Use
- 210. Forest Pathology
- 211. Applied Ecology and Ecosystem Management
- 213. Forest Ecosystems
- 215. Environmental Physiology
- 216. Applied Population Ecology
- 218. Barrier Island Ecology
- 221. Forest Soils
- 230. Weather and Climate
- 231. Environmental Climatology
- 232. Microclimatology
- 234. Watershed Hydrology
- 236. Water Quality Management
- 237. Watershed Modeling
- 251. Natural Resource Data Analysis
- 258. Forest Appraisal (intensive)
- 259. Elements of Forestry (intensive)
- 260. Western Field Trip
- 261. Remote Sensing for Resource Management
- 262. Forest Utilization (intensive)
- 263. Harvesting and Transportation Systems
- 264. Manufacturing Systems
- 266. Ecology of Southern Appalachian Forests

267. Wildland and Wildlife Management
268. Resource Management and Business Practices (intensive)
269. Business Aspects of Natural Resources
270. Resource Economics and Policy
281. Environmental Law (intensive)
283. Environmental Policy and Values
285. Land Use Principles and Policy
288. Forest Taxation (intensive)
299. Independent Projects
301. Forest Nutrition Management
302. Models in Forestry
305. Harvesting Effects on Productivity
306. Dynamic Modeling of Forest Management Strategies (intensive)
307. Ecophysiology of Productivity and Stress
308. Tree Biology
309. Forest Regeneration
310. Hazardous Waste Management: Regulations, Policies and Implementation (intensive)
311. Ecological Toxicology
312. Wetlands Ecology
314. Integrated Case Studies in Toxicology
316. Case Studies in Environmental Management
318. Seminar in Ecotoxicology
322. Microbiology of Forest Soils
325. Ecologic Effects of Acidic Deposition
330. Environmental Monitoring and Instrumentation
331. Water Resource Systems
332. Air Quality Management
335. Water Quality Modeling
350. Applied Regression Analysis
352. Matrix Methods for Resource Systems
355. Optimization Methods for Resource Management
357. Systems Ecology and Modeling
361. Forest Resource Management
363. International Trade and Forest Investment
366. Mathematical Modeling of Lake and Reservoir Water Quality (intensive)
367. Seminar in Forest Resource Management
370. Economics of Intensive Forestry (intensive)
- 372, 373. Advanced Natural Resource Economics
375. Timberland Investment Analysis (intensive)
376. USDA Forest Service Inventory Data: Content and Use (intensive)
381. Natural Resource Policy
382. International Environmental Problems
384. Special Tax Problems for Industrial Timberland Owners (intensive)
385. Decision Theory and Risk Analysis
386. Natural Resource Problem Solving: Developing "People Skills" (intensive)
388. Seminar in Resource and Environmental Policy
389. Seminar in Forest and Conservation History
398. Program Area Seminar
399. Master's Project

Courses Outside of the School

The School of Forestry and Environmental Studies encourages students to take courses offered by other schools and departments at Duke, as well as the University of North Carolina Chapel Hill and North Carolina State University. The following are representative of courses that are available and have been taken by students in the past few years to broaden their programs of study. For additional offerings and course descriptions, students should consult the graduate school bulletins of the three universities.

Business, Economics

Econometrics
Microeconomic Theory
Macroeconomic Analysis
Federal and Public Finance
Economic Growth Problems
International Monetary Theory
Industrial Governmental Relations
Financial Management
Industrial Organization
Financial Accounting

Botany, Zoology

Phycology
Biological Oceanography
Marine Ecology
Comparative Physiology
Physiological Plant Ecology
Plant Physiology
Community Ecology
Evolutionary Mechanisms
Tropical Biology

Environmental Science, Engineering

Aquatic Chemistry
Limnology and Water Pollution
Administration of Environmental Protection
Wastewater Treatment
Environmental Microbiology
Pollutant Transportation
Hazardous Wastes
Solid Waste Engineering

Forestry and Related Disciplines

Forest Genetics
Computer Cartography
Soil Morphology, Chemistry, and Microbiology
Forest Tree Improvement

Law

Land Use Planning
Judicial Administration Policy
International Business Transactions
Resource Law and Policy
Environmental Law
Wildlife Law

Mathematics, Statistics

Linear Models
Multivariate Statistics
Computer Numerical Analysis
Artificial Intelligence
Linear Algebra and Digital Computation
Bayesian Inference and Decision
Stochastic Methods

Planning

Planning Law
Planning Problems
Environmental Systems Analysis
Regional Land Planning
Water Resource Planning

Political Science, Public Policy

Microeconomics and Policy Making
Analytical Methods
Comparative International Development
Politics and Policy Processes

Toxicology

Mammalian Toxicology
Pharmacology and Toxicology
Biochemical Toxicology
Biochemistry
Neurotoxicology
Principles of Immunology

Appendix

Students Registered for the Master of Forestry Degree

- *Aaron, Kimberly Beth (B.S., Illinois Wesleyan University), Hawthorn Woods, Illinois
- Camp, Wade Foster (A.A., Brevard College; B.S., Purdue University), Savannah, Georgia
- Cork, Travis Coleman, III (B.S., Clemson University), Conway, South Carolina
- Cutko, Andrew Raymond (B.A., Williams College), Baltimore, Maryland
- *Diebold, Mary Eileen (B.S., Rollins College; M.Ed., Duquesne University), Pittsburgh, Pennsylvania
- *Ferraro, Leonard David (B.S., Drew University), North Haledon, New Jersey
- Haag, Robert Karl (B.S., University of Redlands), San Marino, California
- *Jacobs, Thomas Dale (A.B., Duke University), Shawnee Mission, Kansas
- *Kagel, Christine Marie (A.B., Augustana College), Jackson, Wisconsin
- Leonard, James Brian (B.S.F., University of New Hampshire), Northport, New York
- Lester, Michael Bruce (A.A., University of Florida; B.S., Colorado State University), Breckenridge, Colorado
- Lusk, Elizabeth Lee (B.A., Davidson College), Greensboro, North Carolina
- McIntyre, Victor Loring (A.A., Brevard College; B.S., North Carolina State University), Durham, North Carolina
- *Ripley, Bruce Alan (B.S., Marshall University), Huntington, West Virginia
- *Ritacco, Jeffrey L. (B.S., Rollins College), St. Paul, Minnesota
- *Rockey, Marianne (B.S., Albright College), Gardners, Pennsylvania
- *Seadale, Scott Edward (B.A., Gettysburg College), Ft. Lauderdale, Florida
- *Smidt, Mathew Frank (B.S., Doane College), Blue Hill, Nebraska
- Stewart, Francis Marion (B.S., Auburn University), Vredenburgh, Alabama
- Sullivan, James Blake (B.B.A., Columbus College), Americus, Georgia
- Travis, Edward Francis (B.S., University of Alabama), Mobile, Alabama
- *Wilson, Elizabeth Jeanne (B.S., Elizabethtown College), Cumberland, Maryland
- *Zweizig, Kurt Emil (B.S., Albright College), Wyndmoor, Pennsylvania

Students Registered for the Master of Environmental Management Degree

- *Akers, Susan Marie (B.S., Wake Forest University), Lake Mary, Florida
- Albee, Mark Kohler (B.S., Bucknell University), Dunwoody, Georgia
- Allen, Susan McWilliams (B.S., St. Lawrence University), Arlington, Massachusetts
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- Asher, Kiran (H.S.C., Parle College-India; B.S., St. Xavier's College-India), Bombay, India
- *Astey, Cheryl J. (B.A., Rollins College), Altamonte Springs, Florida
- *Augspurger, Thomas Paul (B.A., Rollins College), Auburndale, Florida
- *Babcock, Elizabeth Leigh (B.A., Lawrence University), Minneapolis, Minnesota
- *Baines, Robert Ashton (Randolph-Macon College), Washington, Virginia
- *Baker, John Daniel (B.A., Rollins College), Ruxton, Maryland
- Biasetti, Steven Leonard (A.B., College of the Holy Cross), East Setauket, New York
- Bisese, Patrick Lloyd (B.S., Belmont Abbey College), Harvey, Louisiana
- *Brucken, Elizabeth Ann (B.S., Albion College), Shaker Heights, Ohio
- Callender, Edward Everett (B.A., James Madison University), Reston, Virginia
- *Carson, Holly Alice (B.A., Kenyon College), Sylvania, Ohio
- Carter, Gregory Michael (B.S., University of North Carolina at Chapel Hill), Winston-Salem, North Carolina
- Chadra, Ajay (B.S., University of California-Berkeley), Calcutta, India
- *Chadwick, Susan Roberts (A.B., Duke University), Alexandria, Louisiana
- Clark, Ruth Anne (B.S., Davidson College), Summit, New Jersey
- *Coffey, Steven William (A.B., Ripon College), Arkansas City, Kansas
- *Combs, Karen Ann (B.A., Kenyon College), Cincinnati, Ohio
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- *Deane, Michael (B.A., Gustavus Adolphus College), Minneapolis, Minnesota
- *Dixon, Katherine Lea (B.A., The College of William and Mary), Franktown, Virginia
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 Gebauer, Stephanie B. (B.S., Bucknell University), Augusta, New Jersey
 Gelber, Beth Mara (B.S., University of Michigan), Bronx, New York
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bulletin of
Duke University 1988

Marine Laboratory



***A Half Century Dedicated to Education,
Training, Research, and Service***



bulletin of
Duke University 1988

Marine Laboratory

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†Spring only.

*Summer only.





Support Staff

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Sylvester Murray, *Assistant Head Cook*

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Clifton W. Davis, *Maintenance Foreman*

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James G. Chadwick, *Grounds Maintenance Mechanic*

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Howard Lynk, *General Maintenance Mechanic, Senior*

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Mildred E. Tyre, *Housekeeper*

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General Information



The Beaufort Setting

The Duke University Marine Laboratory is situated on fifteen acres of Pivers Island, within the Outer Banks of North Carolina, and adjacent to the historic town of Beaufort. Beaufort itself is the third oldest town in the state and is surrounded by fishing and agricultural communities. Cape Lookout National Seashore Park and the Rachel Carson Estuarine Research Reserve are located within easy boating distance of the Marine Laboratory. From the Marine Laboratory, as well as from the Beaufort waterfront and its boardwalk, one can often see feral horses grazing, see egrets or pelicans flying by, or just observe the beautiful natural scenery in its entirety.

The Natural Resources for Study and Research

The area's system of barrier islands, sounds, and estuaries is well-known for its rich flora and fauna, and diverse habitats, including rivers, creeks, mud flats, unspoiled sand beaches, dunes, marshes, peat bogs, cypress swamps, bird islands, and coastal forests, making the area an excellent haven for both nature lovers and those interested in the pursuit of marine science. The area lies within the range of both the temperate and tropical species of biota. The edge of the Gulf Stream oscillates between twenty and thirty miles offshore, with occasional reefs in between. A great variety of phytoplankton, seaweeds, seagrasses, and marshgrasses may be found in the area. Common animals include the blue crab, squid, shrimps, snails, clams, ctenophores, jellyfish, hydroids, sponges, polychaetes, sea urchins, starfish, brittle stars, sand dollars, skimmers, terns, gulls, herons, sea turtles, porpoises, and many species of fish. All provide ample opportunity for study and research and are readily accessible from the Marine Laboratory on foot, by car, or by boat.

The Marine Laboratory

During the 1930s, Dr. A. S. Pearse and colleagues from Duke University were attracted to the site of Pivers Island and its surrounding abundance of marine life for their summer field studies. The site afforded an excellent location for a marine facility and through the subsequent efforts of Dr. Pearse and others, the land was acquired for the Duke University Marine Laboratory. Construction began and by 1938 the first buildings were erected. Originally, the laboratory served only as a summer training and research facility.

The Marine Laboratory has experienced considerable growth since 1938, and today operates year-round to provide training and research opportunities to about 3,000 persons annually, including undergraduate and graduate students enrolled in the laboratory's academic programs, visiting student groups who utilize the laboratory's facilities, as well as scientists who come from North America and abroad to conduct their own research.

The Marine Laboratory is an interdepartmental training and research facility of Duke University, and as such operates under the policies, procedures, and regulations of the University. Each resident faculty member is affiliated with one or more department of the University. The resident faculty represent the fields of biochemistry, ecology, developmental biology, geology, oceanography, physiology, and systematics.

Pivers Island is only 150 yards across the channel from Beaufort, with a bridge leading to U.S. Highway 70, making the island readily accessible by automobile. Other transportation to the laboratory consists of bus service to Morehead City, about two miles distant from Beaufort and airline service to regional airports (New Bern, Kinston, or Jacksonville).

The modern physical plant consists of twenty-three buildings, including four dormitories, a large dining hall, one residence, boathouse, storehouse for ship's gear, classroom laboratories, six research buildings, and a maintenance complex.

On the Marine Laboratory campus there are recreational facilities for fishing, swimming, rowing, sailing, shuffleboard, basketball, volleyball, and croquet. There are also ample opportunities for recreation in and around Beaufort. The Beaufort area is well-known for its moderate climate, tempered by the Gulf Stream.

The laboratory's year-round seminar/lecture series features many distinguished scientific speakers from across the nation and abroad who help to acquaint both students and fellow researchers with the latest findings in their respective research areas, or present other lectures of a more general nature. Many of the lectures are open to the public as well as to personnel from surrounding marine facilities.

The Beaufort-Morehead City area provides location for five other facilities which collectively are one of the higher concentrations of marine scientists in the nation. These are the University of North Carolina, Institute of Marine Sciences; North Carolina State University, Seafood Laboratory; State of North Carolina, Aquarium—Bogue Banks; State of North Carolina, Division of Marine Fisheries; and the National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Beaufort Laboratory. This concentration of marine scientists provides a critical mass for the pursuit of science and education.

THE DUKE/UNIVERSITY OF NORTH CAROLINA OCEANOGRAPHIC CONSORTIUM

The Oceanographic Consortium operates a 135-foot oceanographic research vessel, the R/V *Cape Hatteras*. Designed as a coastal zone research vessel, the ship operates both on the continental shelf and in the deep sea in the western North Atlantic, concentrating in the region between Nova Scotia and the Caribbean. The ship is a member of the academic research fleet supported by the National Science Foundation for the purpose of providing oceanographic research opportunities to investigators. R/V *Cape Hatteras* is used for training at sea by the five universities that make up the Oceanographic Consortium (Duke, North Carolina State, UNC- Chapel Hill, UNC-Wilmington, and East Carolina). The consortium also manages the acquisition and maintenance of oceanographic instrumentation used aboard R/V *Cape Hatteras*, and promotes annual meetings of marine science staff and graduate students from member institutions. These meetings are held at the Duke University Marine Laboratory.

THE MARINE BIOMEDICAL CENTER

The National Institute of Environmental Health Sciences (NIEHS) provides support to the Duke University Marine and Freshwater Biomedical Sciences Center with the objective of promoting research in the marine sciences relevant to problems of environmental health. The research goals of this Duke Center are to gain an understanding of the mechanisms involved in the adaptation of man and other organisms to an environment that is both hostile and continually changing. Emphasis is on the biochemical and biological impact of organic and metallic pollutants and the use of marine and freshwater organisms as models.

Studies at the center concern: (1) the effects of chemical pollutants on respiratory proteins and electron transport proteins; (2) the effects of metal and nonmetal pollutants on larval development of various invertebrates; (3) pollutant toxicology using blood as a model organ; (4) behavioral aspects of pollution of estuarine and marine systems; (5) the role of metal and nonmetal pollutants in processes associated with animal, plant, and artificial membrane systems; and (6) effects of heavy metals on ion transport phenomena and cellular membrane potentials. Feasibility studies are conducted to explore the advantages of various experimental approaches and to encourage innovative research.

The Beaufort Experience

The Marine Laboratory is an academic community and the self-sufficient nature of its residential life serves well those who come here to study or to conduct research. The academic programs are limited to fifty students per regular academic semester or summer term (spring, summer, or fall), making for small group learning. Although recreational opportunities are ample, the distractions are limited, allowing both student and researcher to become totally involved in the pursuit of marine science. Both students and researchers alike find that the Marine Laboratory has an invitingly open, friendly, and relaxed atmosphere which draws many back year after year. This community feeling, as well as the potential for total immersion, has become part of what has been termed "The Beaufort Experience."

Academic Programs



1988 Duke University Marine Laboratory Calendar

PROGRAM	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
SPRING	————— (Jan. 7-April 30) —————											
CUPMS ¹			————— (March 28-May 7) —————									
I				————— (May 9-June 10) —————								
II					————— (June 13-July 15) —————							
III						————— (July 18-Aug. 19) —————						
FALL					————— (Aug. 29-Dec. 17) —————				—————			
¹ Cooperative Undergraduate Program in Marine Science												

The academic programs and curricula listed herein may be subject to change.

SUMMER

Academic Programs

In today's competitive world, students seek education not only for self-enrichment, but also for career enhancement. Marine studies can fulfill both needs. The orderly exploitation of the earth's remaining frontier, the oceans, not only requires marine scientists, but increasingly requires legal, business, and political leaders who understand the oceans. Exploration and research must now be complemented by development, regulation, and litigation.

Over the last fifty years, more than 4,000 students from over 300 schools have taken courses at the Duke University Marine Laboratory (DUML). Thousands more have used our laboratory facilities for field trips.

The fall and spring semester programs are open to qualified juniors and seniors from any college or university. Before attending DUML for a semester program, it is advised that a student has completed the following introductory courses: calculus, biology, chemistry, and physics.

In our three-term summer program, the wide variety of courses offer choices for both science and nonscience majors. Some courses have no prerequisites and others are intended for advanced majors.

Graduate students may also participate in the fall, spring, or summer program. The 200-level courses are intended for graduate/advanced undergraduate students.

Our Cooperative Undergraduate Program in the Marine Sciences (CUPMS), taught in the spring, has been developed specifically for students whose school calendar is different from that of Duke. This six-week intensive program is intended for science students in their junior or senior year.

The following courses fulfill specific requirements for Duke degree candidates in the majors of zoology and biology (A.B. and B.S.):

- | | |
|---------------------------------------|--|
| 1. Zoology 76L (Fall) | Fulfills animal diversity requirement |
| 2. Zoology 176L (Summer I) | Fulfills animal diversity requirement and zoology lab requirement |
| 3. Zoology 274L (Summer III) | Fulfills animal diversity requirement and zoology lab requirement |
| 4. Zoology 150L (Spring and Summer I) | Fulfills physiology option or can be taken as an elective if ZOO 151L has already been taken |
| 5. Zoology 169L (Fall) | Fulfills ecology option; cannot be taken if ZOO 103L has already been taken |
| 6. Zoology 203L (Summer II) | Fulfills ecology option or can be taken as an elective if ZOO 103L has already been taken |

All other 100- and 200-level zoology and botany courses and 200-level geology courses count as electives within the botany, biology, and zoology major.

Spring Semester—Undergraduate Marine Sciences Program

7 January-30 April 1988

A full study list ordinarily is four (4) course credits. The curriculum consists of the courses below.

Biological Oceanography. (Botany 114L or Zoology 114L.) Physical, chemical, and biological processes of the oceans, emphasizing special adaptations for life in the sea and factors controlling distribution and abundance of organisms. Laboratory emphasis. Prerequisite: introductory biology. One course (4 s.h.*). *Ramus*

Physiology of Marine Animals. (Zoology 150L.) Environmental factors, biological rhythms, and behavioral adaptations in the comparative physiology of marine animals. (Fulfills Duke physiology option, or can be taken as an elective if Zoology 151L has already been taken.) Prerequisites: introductory biology and chemistry. One course (4 s.h.). *Forward*

Analysis of Coastal Ecosystems. (Zoology 296S.) An examination of physical, chemical, biological and geological components comprising estuarine systems, with special emphasis on North Carolina. Interaction of science, policy and management. One course (3 s.h.). *Costlow*

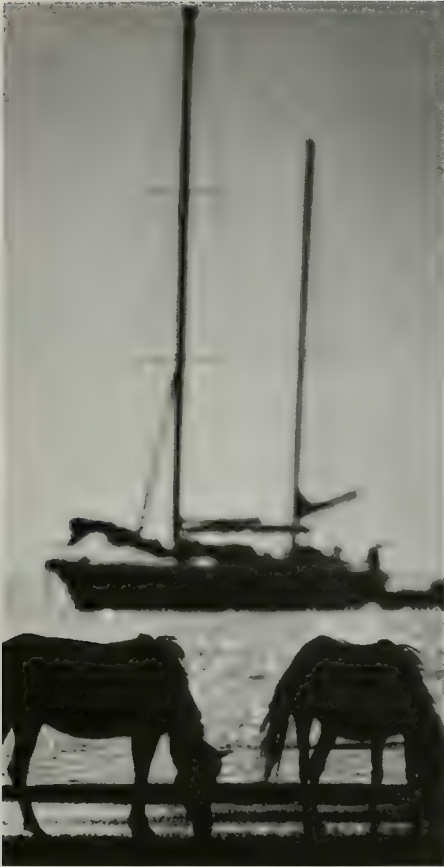
Beach and Island Geological Processes. (Geology 196S.) Processes affecting evolution of beaches and barrier islands with emphasis on the effect of construction. Half course (2 s.h.). *Pilkey*

The Ecology of Chemical Signals. (Zoology 296S.) Pheromone communication, predator-prey interactions, chemical warfare, resource location. An experimental and mechanistic study of chemically mediated behaviors central to marine ecology. Half course (2 s.h.). *Rittschof*

Experimental Ecology of the Marine Intertidal Zone. (Zoology 296S.) Reading and discussion of papers published since about 1960. Half course (2 s.h.). *Sutherland*

Independent Study. (Botany 192, Geology 192, Geology 195, Zoology 192 or Physiology 210.) For seniors and juniors with consent of the appropriate Director of Undergraduate Studies and the supervising instructor. One course (3-4 s.h.). *Staff*

*Semester Hour(s) = s.h.



COOPERATIVE UNDERGRADUATE PROGRAM IN THE MARINE SCIENCES

28 March-7 May 1988

During the late spring, the Duke University Marine Laboratory offers an intensive six-week program on the marine environment to students from institutions which have no marine laboratory facilities.

Lectures in the program cover the physical, chemical, geological, and biological aspects of the marine environment with emphasis on the ecology of marine organisms. Numerous field trips are made to estuarine and near-shore habitats which involve environmental measurements, identification of plants and animals collected, and discussion with emphasis on morphological, physiological, and ecological adaptations to the particular habitat. Students read original research papers, give oral reports on relevant topics, and submit written reports on laboratory and field work.

First Summer Term

9 May-10 June 1988

Marine Biology. (Biology 10L.) Physical and chemical characteristics of marine ecosystems and the functional adaptations of marine organisms to these systems. Lectures, field trips, and laboratories. For students not majoring in a natural science. One course (4 s.h.). *Staff*

Biological Oceanography. (Botany 114L or Zoology 114L.) Physical, chemical, and biological processes of the oceans, emphasizing special adaptations for life in the sea and factors controlling distribution and abundance of organisms. Laboratory emphasis. Prerequisite: introductory biology. One and one-half courses (6 s.h.). *Staff*

Physiology of Marine Animals. (Zoology 150L or Zoology 250L.) Environmental factors, biological rhythms, and behavioral adaptations in the comparative physiology of marine animals. (Fulfills Duke physiology option, or can be taken as an elective if Zoology 151L has already been taken.) Prerequisites: introductory biology and chemistry. One course or 4 graduate units (4 s.h.). *Rittschoff*

Marine Invertebrate Zoology. (Zoology 176L.) Structure, functions, and development of invertebrates collected from estuarine and marine habitats. Not open to students who have taken Zoology 76L or 274L. (Fulfills Duke animal diversity requirement and zoology lab requirement.) Prerequisite: introductory biology. One and one-half courses (6 s.h.). *Kirby-Smith*

Independent Study. (Botany 191 or Zoology 191.) For senior and junior majors with permission of the appropriate director of undergraduate studies and the supervising instructor. Course credit to be arranged. *Staff*

Research. (Botany 359.) Individual investigation in the various fields of botany. Credit to be arranged. (For graduate students only.) *Staff*

Research. (Zoology 353.) To be carried on under the direction of the appropriate staff members. Hours and credit to be arranged. (For graduate students only.) *Staff*

Second Summer Term

13 June-15 July 1988

Biology of Marine Macrophytes. (Botany 116L or Botany 216L.) Physiology and ecology of seaweeds, seagrasses, marshgrasses, and mangroves. Biological flux of carbon and nutrients in coastal seas. Ecological consequences of photosynthetic adaptations. Prerequisites: introductory biology and chemistry. One course or 4 graduate units (4 s.h.). *Ramus*

Behavioral Ecology. (Zoology) Investigating how ecological factors shape foraging, mating, aggressive, and social behavior. Laboratory experiments and field observations will be drawn from the Outer Banks environment. Independent projects and seminars. Prerequisite: introductory biology. One course or 4 graduate units (4 s.h.). *Rubenstein (visiting summer faculty)*

Marine Ecology. (Zoology 203L.) Application of ecological theory to marine systems. Emphasis on hypothesis formulations, field experimentation, data analysis, scientific writing, and familiarity with current ecological literature. (Fulfills Duke ecology option, or can be taken as an elective if Zoology 103L has already been taken.) Prerequisite: a course in introductory ecology, invertebrate zoology, or marine botany (phycology); knowledge of statistics recommended. One and one-half courses or 6 graduate units (6 s.h.). *Hay (visiting summer faculty)*

Primary Productivity in the Seas. (Botany 215L or Zoology 215L.) The biological flux of carbon in the coastal and open seas involving phytoplankton, seaweeds, seagrasses, and marshgrasses. The contributions of these primary producers to food chain processes and global atmospheric-sedimentary cycles, as well as the ecological consequences of variations in photosynthetic mechanisms. **(Offered alternate summers; not taught during 1988.)** Prerequisites: introductory biology and introductory chemistry. One course or 4 graduate units (4 s.h.). *Ramus*

Barrier Island Ecology. (Botany 218 or Forestry and Environmental Studies 218.) Adaptation of plants to barrier island migration and other physical characteristics of the coastal environment. Major emphasis on management of barrier beaches from Maine to Texas and the impact of human interference with natural processes. Field studies. Prerequisite: course in general ecology. One and one-half courses or 6 graduate units (6 s.h.). *Staff*

Tropical Seaweeds. (Botany 263L.) Collection, preservation, description, illustration, and descriptive ecology. Two-week field study in Mexico. (Additional information on course and costs will be available upon request.) Prerequisite: Botany 145L or equivalent or consent of instructor. Half course or 2 graduate units (2 s.h.). *Searles*

Independent Study. (Botany 192 or Zoology 192.) For senior and junior majors with permission of the appropriate director of undergraduate studies and the supervising instructor. Course credit to be arranged. *Staff*

Research. (Botany 360.) Individual investigation in the various fields of botany. Credit to be arranged. (For graduate students only.) *Staff*

Research. (Zoology 354.) To be carried on under the direction of the appropriate staff members. Hours and credit to be arranged. (For graduate students only.) *Staff*

Third Summer Term

18 July-19 August 1988

Marine Biology. (Biology 10L.) Physical and chemical characteristics of marine ecosystems and the functional adaptations of marine organisms to these systems. Lectures, field trips, and laboratories. For students not majoring in a natural science. One course (4 s.h.). *Staff*

Marine Policy. (Public Policy Studies 195S.) Formal study of policy and policymaking regulating the exploitation of the marine environment. History of specific marine-related organizations, legislation, and issues are traced and their effects on local, regional, national, and international arenas. Topics explored through use of theoretical and methodological perspectives, including political science, sociology, and economics. Lec-

tures, including seminar presentations by visiting marine policymakers and policy analysts. Major emphasis is national in scope; some examples from North Carolina and the Mid- and South Atlantic areas. One course (3 s.h.). *Orbach (visiting summer faculty)*

Marine Invertebrate Zoology. (Zoology 274L.) Structures, functions, and habits of invertebrate animals under natural and experimental conditions. Field trips. (Fulfills Duke animal diversity requirement and zoology lab requirement.) Not open to undergraduate students who have taken Zoology 76L or 176L except by consent of Director of Undergraduate Studies. Prerequisite: introductory biology. One and one-half courses or 6 graduate units (6 s.h.). *Ruppert (visiting summer faculty)*

Invertebrate Developmental Biology. (Zoology 278L.) Gametogenesis, fertilization, and development of invertebrates, with emphasis on experimental studies of prelarval stages. Prerequisite: consent of instructor. One and one-half courses or 6 graduate units (6 s.h.). *Staff*

Continental Margin Sedimentation. (Geology 295S.) Sediment composition and distribution on the continental margin, with emphasis on North Carolina barrier island/lagoon, shelf and slope environments. The course includes field work and laboratory analyses of sediments as well as readings and discussion of the current literature. Prerequisite: Geology 205S or Geology 206S or consent of instructor. One course or 4 graduate units (4 s.h.). *Johnson and Wells (visiting summer faculty)*

Independent Study. (Botany 191 or Zoology 191.) For senior and junior majors with permission of the appropriate Director of Undergraduate Studies and the supervising instructor. Course credit to be arranged. *Staff*

Research. (Botany 359.) Individual investigation in the various fields of botany. Credit to be arranged. (For graduate students only.) *Staff*

Research. (Zoology 353.) To be carried on under the direction of the appropriate staff members. Hours and credit to be arranged. (For graduate students only.) *Staff*

Fall Semester—Undergraduate Marine Sciences Program

29 August—17 December 1988

A full study list ordinarily is four (4) course credits. The curriculum consists of the courses listed below.

Marine Invertebrate Diversity. (Zoology 76L.) Form, function, and evolution of invertebrates from estuarine and coastal habitats. Laboratory study of perception, feeding, digestion, respiration, locomotion, reproduction, and development. Field study of adaptations to natural environments. (Fulfills Duke animal diversity requirement.) Not open to students who have taken Zoology 176L or 274L. Prerequisite: introductory biology. One course (4 s.h.). *Kirby-Smith*

Marine Sediments. (Geology 109S or Geology 209S*.) Sedimentary processes in near-shore, shelf and deep-sea environments. Emphasis on field methods and laboratory analyses. (*Geology 209S: requirement of additional term paper.) One course (4 s.h.). *Johnson*

Organization of Marine Communities. (Zoology 169L.) Dynamics of marine communities in the context of current ecological theory. Life history strategies, competition, predation, diversity, and stability; detailed considerations of benthic and pelagic communities. (Fulfills Duke ecology option.) Students may not receive credit for both Zoology 103L and 169L. Prerequisites: introductory biology and mathematics. One course (4 s.h.). *Sutherland*

Light in the Sea. (Botany 195S.) Properties of light in the sea and the biological consequences; orientation, bioluminescence, biological rhythms, primary production, and sensing devices. Half course (2 s.h.). *Ramus*

Physical Oceanography. (Geology 203.) Physical processes in the oceans: the physical properties of seawater, the dynamics of currents, waves and tides, and the transmission of light and sound in the sea. Prerequisite: Physics 41 or 51. Half course (2 s.h.).
Johnson

Marine Animal Navigation. (Zoology 295S.) Orientation to visual, chemical, mechanical, and magnetic cues. To examine aspects of the cues used for navigation, behavior involved, functional significance, and experimental design. Half course (2 s.h.).
Forward

Independent Study. (Botany 191, Geology 191, Geology 195, Zoology 191 or Physiology 210.) For seniors and juniors with consent of the appropriate Director of Undergraduate Studies and the supervising instructor. One course (3-4 s.h.). *Staff*

Graduate Program

Graduate students from any and all academic disciplines are encouraged to take professional training at the Marine Laboratory. The program operates year-round, providing course work in the marine sciences, an active seminar program, and facilities supporting dissertation research. Resident graduate students represent the Departments of Biochemistry, Botany, Forestry and Environmental Studies, Geology, Physiology, and Zoology. Ordinarily, dissertation advisers are resident as well, although this need not be the case. The Marine Laboratory has available several full-time instructional assistantships (including summer) as well as endowed fellowships, including the Rachel Carson Graduate Fellowship, the Harvey W. Smith Graduate Fellowship in Biological Oceanography, the Lynde and Harry Bradley Fellowship, and the Robert Safrit Fellowship. In addition, tuition credits obtained from fellowship support may be applied to courses given both at the Marine Laboratory and the Durham campus, regular semesters and summer terms. Students are admitted to degree programs in regular academic departments, not the Marine Laboratory (consult the current *Bulletin of Duke University—Graduate School* for additional information). Generally, degree requirements, excepting dissertation research, are met on the Durham campus, then students take residence at the Marine Laboratory for dissertation research.

Marine Sciences Education Consortium (MSEC)

The Marine Sciences Education Consortium (MSEC) was developed to provide a formal curriculum in the marine sciences, including supervised research, to member institutions. Such institutions are liberal arts colleges or universities attended by students who are preparing for careers in the marine sciences or who have a strong liberal arts interest in the oceans but for whom no specialized programs in the marine sciences are available. Duke University has developed the specialized coastal physical plant, vessels, equipment, library, and faculty necessary to implement such programs. MSEC students have access to the spring and fall semester programs in marine sciences as well as the summer program here at the Duke Marine Laboratory, including room/board facilities. Currently, member institutions include Denison University, Furman University, Gettysburg College, Hood College, Juniata College, North Carolina State University, Oberlin College, Presbyterian College, Trinity College, and Wittenberg University.

Members join upon invitation and mutual agreement. Inquiries from interested institutions are welcome and requests to join the MSEC will be considered. Such inquiries should be addressed to the Assistant Director for Academic Programs, Duke University Marine Laboratory, Beaufort, North Carolina 28516.

Visiting Scholar Programs

The exchange of knowledge is kept lively by several programs which bring distinguished scientists/educators to the Marine Laboratory. The Visiting Scholar Program brings lecturers for a period of several days on a monthly basis year-round. The Cocos Foundation brings visitors for longer periods of time, usually five weeks and only during the summers. The scholars, while in residence, lecture to the community at large as well as enrich specific research groups.

Requirements and Procedures

Spring and Fall Semester—Undergraduate Marine Sciences Programs. During the spring and fall semesters interdisciplinary programs in marine sciences provide an opportunity for undergraduate students to live and study at the Marine Laboratory. The programs are open to qualified junior and senior students. In the case of Duke students, participation in both the spring and fall semesters is possible only with the consent of their departmental adviser.

Duke students can obtain the appropriate application form from the back of this bulletin, the Director of Undergraduate Studies in their major department, or by writing to the Marine Laboratory. On the Durham campus, additional information about the Duke University Marine Laboratory and the academic programs is available from Dean Deborah Roach, 04 Allen Building. Duke students should submit the completed application. Non-Duke students should submit the appropriate application form (contained toward the back of this bulletin), one letter of recommendation from academic faculty, and a current transcript of academic work. All completed applications and supporting credentials, if required, (from all applicants) should be received prior to the preceding 2 November (for spring semester 1988) and the preceding 21 March (for fall semester 1988) by the Admissions Office of the Marine Laboratory. (Applications received after these dates will be considered on a space-available basis.) Applicants will be notified by mail concerning their admission status.

Summer Terms. Introductory level courses (numbered below 100) offered during the summer at the laboratory are open to all qualified college students; advanced level courses (numbered 100 to 199) are intended for undergraduate students from the sophomore to the senior level; senior-graduate level courses (numbered from 200 to 299) are intended for advanced undergraduates and graduate students (juniors and well-qualified sophomores may enroll in these courses with special permission). Undergraduates may not enroll in 300-level courses.

Students apply for all *undergraduate* and *graduate courses* and for *graduate graded research* by submitting the Summer Session application found at the back of this bulletin.

The application and current transcripts (in the case of those who are applying to courses numbered 100 or above) should be submitted by all applicants to the Admissions Office of the Duke University Marine Laboratory as early as possible to allow for adequate processing time and to assure a space in the desired course(s). Late applicants will be considered if space permits. All applicants will be notified by mail as promptly as possible after a decision has been reached concerning their application. Upon acceptance, payment of required deposit(s) is essential to reserve space in a course as well as room and board accommodations.

Students who have had adequate preparation and approval of their major professor may request space for independent or thesis research. Students register for *ungraded graduate research* and *residence only* on *Graduate School course cards* (available from the appropriate director of graduate studies and to be returned to the Graduate School, 127 Allen Building).

Summer Credit. The summer session term credit does not mean degree credit at Duke University unless the student has been admitted as a degree candidate by one of

the colleges or schools of the University. Other students will be categorized as nondegree (unclassified) students for the summer only. A student taking a course for credit is expected to do all the work required and to take the final examination, and will receive a grade.

Summer Minimum Enrollment. Some courses are offered subject to minimum enrollments. In withdrawing a course not having adequate enrollment, every effort will be made to place the student in an alternate course which has been listed by the student as a second choice.

Summer Maximum Program Load. The maximum load for one term of the summer session at the Marine Laboratory is a one and one-half course (or 6 graduate unit) program (semester hour equivalents are listed under the course descriptions). A greater load may be possible only with the approval of the student's Dean or the appropriate director of graduate studies. Non-Duke students must obtain approval from the director of the summer session.

Immunizations. North Carolina Statute G.S.: 130A-155.1 states that no person shall attend a college or university, public, private, or religious . . . unless a certificate of immunizations against diphtheria, tetanus, whooping cough, poliomyelitis, red measles (rubeola), and rubella is presented to the college or university on or before the first day of matriculation.

Duke students should have already satisfied this provision. Non-Duke students must obtain the required immunizations and present certification that the required immunizations have been received. Certifications must be sent to Director of Student Health Services, Box 2914 DUMC, Duke University, Durham, NC 27710. *Failure to do so will result in the students being withdrawn from classes. There will be no refunds. Non-Duke students have the responsibility for requesting forms from the Marine Laboratory Admissions Office.*

Financial Information

Figures quoted in this section are projections in some cases and may be subject to change without prior notice.

SPRING AND FALL SEMESTER—UNDERGRADUATE MARINE SCIENCES PROGRAMS

Tuition and fees for the fall semester are unavailable at the time of this printing.

Tuition. Tuition for the spring semester will be \$5,000. (See also section on payment of tuition and fees.)

Health Fee. Students are required to pay \$107 for the spring semester.

Student Activity Fee. The student activity fee for the spring semester will be \$51.85.

Room and Board. The total room and board fee for the spring semester will be \$2,160. All dormitory occupants must supply their own linens, blankets, and towels, but pillows will be furnished. If a key is desired, a key deposit of \$10 (per semester) will be charged each person occupying a room. This deposit will be refunded at time of departure and return of key.

Full board provides for three meals a day, Monday through Saturday, and breakfast and dinner on Sunday. No credit will be allowed for meals that are missed.

Estimated Semester Costs. Estimated costs for the spring semester will be: tuition—\$5,000; health fee—\$107; student activity fee—\$51.85; room and board—\$2,160. Books, if required by the instructor, will be available at registration.

Payment of Tuition and Fees. The Office of the Bursar (Duke University, Durham campus) will issue invoices to registered students for tuition, fees, and other charges ap-

proximately four to six weeks prior to the beginning of classes each semester. The *total amount due* on the invoice is payable by the invoice late payment date which is normally one week prior to the beginning of classes. A student is required to pay all invoices as presented. If full payment is not received, a late payment charge as described below will be assessed on the next invoice and certain restrictions will be applied. Failure to receive an invoice does not warrant exemption from the payment of tuition and fees nor from the penalties and restrictions. (Duke University students on other tuition payment plans—see the current *Bulletin of Duke University: Undergraduate Instruction*.) Non-registered students will be required to make payment for tuition and fees (and any past due balance) at the time of registration. Payments should be sent to the address indicated on the invoice and not to the Duke Marine Laboratory.

Late Payment Charge. If the *total amount due* on an invoice is not received by the invoice late payment date, the next invoice will reflect a penalty charge of 1 and $\frac{1}{4}$ percent per month assessed on the past due balance regardless of the number of days past due. The *past due balance* is defined as the previous balance less any payments and credits received on or before the due date and also any student loan memo credits or scholarship related to the previous balance which appear on the invoice.

SUMMER TERMS

Tuition. The following are tuition charges for summer registration.

1. Undergraduate students:
 - a. \$1,740 for each one and one-half course (6 s.h.)
 - b. \$1,160 for each undergraduate laboratory course (4 s.h.)
 - c. \$870 for each nonlaboratory course (3 s.h.)
 - d. \$580 for each half-course (2 s.h.)
2. Graduate students:
 - a. \$290 per unit (s.h.)
 - b. For an undergraduate course, the tuition rate indicated in section 1 above is applicable.

Auditing Fees.

1. With permission of the instructor and the director, students registered for a full program (6 s.h.) may audit courses. No extra charge is made.
2. Students carrying less than a full program (6 s.h.) may be granted permission by the instructor and the director to audit a course, but must pay half the University fee for the course.

Health Fee. Students are required to pay \$31 per term.

Room and Board. Total charges for room and board are estimated at \$720 per term or higher.

Air-conditioned, as well as a few non-air-conditioned, dormitory rooms are available. (Upon acceptance in a course, students will be sent an acceptance and reservation form. Reservation for housing and board should be made on this form and the form promptly returned to the Marine Laboratory along with the room and board reservation deposit, if the student elects to utilize room and board.)

Occupants must supply their own linens, blankets, and towels, but pillows will be furnished.

Full board provides for three meals a day, Monday through Saturday, and breakfast and dinner on Sunday. There will be no credit allowed for missed meals.

Deposits.

1. Course Deposit. Upon acceptance in a course, a nonrefundable deposit of \$50 (per course) is required to ensure a reservation in that course. If the student proper-

- ly registers for the course and attends, the deposit will be credited to tuition.
2. **Room and Board Deposit.** A \$50 deposit (per term) is required to ensure a reservation for room and board. If the student properly registers, the deposit will be credited to the room and board charge. The deposit is refundable if a student who has previously made a room and board reservation properly withdraws from a course prior to the beginning of the term. *The deposit is nonrefundable if a student who has previously made a room and board reservation at the Marine Laboratory subsequently decides not to utilize the room and board facilities (although he or she still plans to attend the course) and does not notify the Marine Laboratory at least two weeks prior to the beginning of the term.*
 3. **Key Deposit.** If a key is desired, a key deposit of \$10 per term will be charged each person occupying a dormitory room. This deposit will be refunded at time of departure and return of the key.

Estimated Term Costs. Estimated costs for each of the summer terms will be: tuition—(see tuition section); student health fee—\$31; room and board—about \$720 or higher. Books, if required by the instructor, will be available at registration.

Payment of Tuition and Fees. Duke University Marine Laboratory does not mail statements for summer term tuition and fees. All tuition and fees must be paid to the Accounting Office (Duke University Marine Laboratory, Beaufort, North Carolina 28516) on or before the Friday preceding the beginning of each summer term—see Duke University Marine Laboratory calendar for term dates). Checks should be made payable to Duke University Marine Laboratory and may be mailed to the above address. *Failure to pay tuition and fees by the end of the drop/add period (the first three days of classes in any term) will result in administrative withdrawal of the student.* Withdrawn students may not attend class or subsequently be registered for the term. Students who are unable to meet these deadlines should consult with the Accounting Office prior to the deadline.

Late Payment Charge. Students who fail to pay all tuition and fees on or before the Friday preceding the beginning of each term will pay an extra \$25 fee.

TRANSCRIPTS

Requests for transcripts of academic records should be directed to the Associate Registrar, Office of the Registrar, 103 Allen Building, Duke University, Durham, North Carolina 27706. Ten days should be allowed for processing. A fee of \$1, payable in advance, is charged for each copy. Such requests should not be directed to the Marine Laboratory.

REFUNDS

Spring and Fall. In the case of withdrawal from the University, students or their parents may elect to have tuition refunded or carried forward as a credit for later study according to the following schedule:

<i>Withdrawal</i>	<i>Refund</i>
Before classes begin	Full amount
During first or second week	80 percent
During third, fourth, or fifth week	60 percent
During sixth week	20 percent
After sixth week	None

Tuition charges paid from grants or loans will be restored to those funds on the same pro rata basis and will not be refunded or carried forward. In addition to tuition the schedule also applies to other Marine Laboratory fees. In the event of death, a full tuition and fees refund will be granted. Consult the *Bulletin of Duke University—Undergraduate Instruction* for additional information.

Summer Terms—Withdrawal Charge and Refund of Tuition and Fees. *Students who will not be attending a summer term or course for which they have been officially accepted*

must drop the course(s) prior to the first day of class, even if they have not paid tuition and fees. *Failure to drop the course(s) will result in administrative withdrawal* at the end of the first three days of the term and billing of the student for twenty percent of the tuition plus the health fee. If tuition and fees have been paid, the following refund policies apply:

1. When applications for withdrawal or drops from a course or term are received by the Admissions Office of the Duke University Marine Laboratory before the first class day of a given term, full tuition and fees will be refunded.
2. When applications for withdrawal or drops from a course or term are received by the Admissions Office of the Duke University Marine Laboratory during the first three class days of a given term, 80 percent of the tuition and the room and board fee will be refunded. The health fee will not be refunded. There will be no charge for drop/adds which result in no change in tuition.
3. When applications for withdrawal or drops from a course or term are received by the Admissions Office of the Duke University Marine Laboratory after the third class day, there will be no refund of tuition and fees.

CHECK CASHING

The banks in the Beaufort-Morehead City area have indicated that they will not cash personal checks for students unless they are guaranteed. Therefore, it is recommended that students who come to the laboratory bring with them sufficient travelers' checks, money orders, certified checks (which the banks will cash), or cash to cover personal expenses. The Marine Laboratory will accept personal checks to pay course fees. There is a Wachovia Bank in Beaufort and Morehead City.

Financial Assistance

SUMMER TUITION SCHOLARSHIPS AND FELLOWSHIPS FOR UNDERGRADUATE AND GRADUATE STUDENTS

The Bookhout Scholarship, the Deborah Susan Steer Memorial Scholarship in Marine-Life Sciences, the Wade Family Fellowship, and the Harvey W. Smith Undergraduate Fellowship are awarded on a competitive basis by the Duke University Marine Laboratory (DUML). Each award provides tuition for one course taken during the summer. Awards require that the student live on campus, i.e., take room and board at the Marine Laboratory. Undergraduate Independent Study and Graduate Research courses do not qualify for these awards. The criteria which are used in review of scholarship/fellowship applicants include academic excellence, scope of preparation, and professional goals. Selection of awardees will be made by the DUML faculty.

A precondition to review of a scholarship/fellowship application is admission to a specific summer course. (Admission to courses does not automatically imply award of scholarship/fellowship; separate reviews are conducted.)

A separate scholarship/fellowship application form is not utilized. Intent to apply for a scholarship/fellowship should be made in writing as early as possible; for convenience, this can be done as a short note at the top of the summer course application, or in letter form. In addition to the summer application for courses, each scholarship/fellowship applicant is required to submit (1) college or professional school transcript(s), (2) a letter of recommendation from academic faculty, and (3) a brief statement of purpose, i.e., the reason for taking the particular course. *All scholarship/fellowship credentials must be received no later than 31 March 1988 by the Admissions Office of the Marine Laboratory.* Announcement of award will be made by mail shortly after the deadline date.

Bookhout Scholarship. The Bookhout Scholarship provides financial assistance to juniors, seniors, or beginning graduate students with a professional interest in the natural sciences.

Deborah Susan Steer Memorial Scholarship in Marine-Life Sciences. Each year the income from the fund is used to provide financial assistance to promising Duke undergraduates who wish to study marine life-sciences at the Duke University Marine Laboratory.

The Wade Family Fund. The income from this fund is used to support undergraduate and graduate student participation in academic courses. Awards are made at the discretion of the Director of the Marine Laboratory.

Harvey W. Smith Undergraduate Fellowship in Biological Oceanography. The income from this fund is used to support undergraduate participation in academic courses.

UNDERGRADUATE FINANCIAL AID

Financial aid is available to Duke University undergraduate students for each summer term. Interested students can obtain specific details and an application from the Financial Aid Office, Duke University, 2106 Campus Drive, Durham, NC 27706 in March of each year.

FULL-TIME GRADUATE SUPPORT

Full-time (academic year, including summer) graduate support is available to students registered in a graduate program in any department in the sciences at Duke University. Recipients must be in residence at the Marine Laboratory during the period of their appointment and must also conduct, or plan to conduct, their research at the Beaufort campus. Support is available in the form of Duke University Marine Laboratory Instructional Assistantships, the Rachel Carson Fellowship, the Harvey W. Smith Graduate Fellowship in Biological Oceanography, the Lynde and Harry Bradley Fellowship, and the Robert Safrit Graduate Fellowship. Awards will be made annually for a maximum of three years.

Instructional assistantship applicants must submit (1) a letter of recommendation from their major professor and (2) graduate record, including (a) date admitted to the Graduate School, (b) courses completed and grades, (c) dissertation committee, (d) date of qualifying examination, (e) statement of research program. Fellowship applicants must submit (1) a statement of the proposed research for the term of the fellowship, (2) two letters of recommendation, one of which must come from faculty outside of the Duke University Marine Laboratory, and (3) graduate record, including (a) date admitted to the Graduate School, (b) date of qualifying examination, (e) title of dissertation or thesis. *Complete applications for instructional assistantships and/or fellowships must be received by the Assistant Director for Academic Programs before 29 February 1988.*

For further information, write the Assistant Director for Academic Programs, Duke University Marine Laboratory, Beaufort, North Carolina 28516.

Rachel Carson Graduate Fellowship. The recipient is expected to conduct research related to some aspect of the Rachel Carson Estuarine Research Reserve.

Harvey W. Smith Graduate Fellowship in Biological Oceanography. The recipient must conduct research in biological oceanography.

Lynde and Harry Bradley Fellowship. The recipient must conduct research in some aspect of marine science or policy. Awards are made at the discretion of the Director of the Duke University Marine Laboratory.

Robert Safrit Graduate Fellowship. The recipient must conduct research in some aspect of marine science. Awards are made at the discretion of the Director of the Duke University Marine Laboratory.

Resources for Study and Research



Research Staff and Their Programs

Drs. Joseph Bonaventura and Celia Bonaventura. Physiological and Biochemical Adaptations of Organisms to the Marine Environment and Marine Biotechnology.

Marine organisms are found in environments characterized by great diversity in temperature, pH, salinity, oxygen availability, etc. Through biochemical studies the structural and functional diversity of these organisms and their environments is being shown to be paralleled by diversity at the molecular level. The respiratory proteins of marine organisms are being studied in order to increase the understanding of molecular adaptations and the mechanisms which give rise to functional flexibility. Investigations include measurements of the kinetics and equilibria of ligand binding to hemoglobins, hemocyanins, and cytochrome *c* oxidase with emphasis on the reactivity of these proteins as regulated by metabolic effectors. The subunit interactions involved in assembly of giant hemocyanin molecules are also under investigation. These studies are complemented by work in the Protein Engineering and Technology Laboratory where properties of chemically modified, crosslinked, and immobilized forms of biologically active molecules are characterized.

Bickar, D.; Bonaventura, J.; Bonaventura, C.; Auer, H.; and Wilson, M. 1984. Paradoxical effects of methylmercury on the kinetics of cytochrome *c* oxidase. *Biochemistry* 23:680-684.

Bickar, D.; Lehninger, A.; Brunori, M.; Bonaventura, J.; and Bonaventura, C. 1985. Functional equivalence of monomeric (shark) and dimeric (bovine) cytochrome *c* oxidase. *J. Inorg. Biochem.* 23:365-372.

Johnson, B. A.; Bonaventura, C.; and Bonaventura, J. 1984. Allosteric modulation of *Callinectes sapidus* hemocyanin by binding of L-lactate. *Biochemistry* 23:872-878.

Sugihara, J.; Imamura, T.; Nagafuchi, S.; Bonaventura, J.; Bonaventura, C.; and Ca-shon, R. 1985. Hemoglobin Rahere, a human hemoglobin variant with amino acid substitution at the 2,3-diphosphoglycerate binding site. Functional consequences of the alteration and effects of bezafibrate on the oxygen bindings. *J. Clin. Invest.* 76:1169-1173.

Dr. C. G. Bookhout. Larval Ecology and Larval Development of Invertebrates.

This laboratory investigates the effects of pollutants, such as insecticides and drilling fluids, on the complete development of mud-crabs and blue crabs. Also, a study of the development of the family of crabs to which the blue crab belongs is being conducted.

Bookhout, C. G.; Costlow, J. D.; and Monroe, R. 1980. Kepone* effects on larval development of mud-crab and blue crab. *Water Air Soil Pollut.* 13:57-77.

Bookhout, C. G.; Monroe, R. J.; Forward, R. B., Jr.; and Costlow, J. D., Jr. 1984. Effects of soluble fractions of drilling fluids on development of crabs, *Rhithropanopeus harrisi* and *Callinectes sapidus*. *Water Air Soil Pollut.* 21:183-197.

Bookhout, C. G.; Monroe, R. J.; Forward, R. B., Jr.; and Costlow, J. D., Jr. 1984. Effects of hexavalent chromium on development of crabs, *Rhithropanopeus harrisi* and *Callinectes sapidus*. *Water Air Soil Pollut.* 21:199-216.

Dr. Marius Brouwer. Role of Metal Ions in Biology.

(1) Basic studies on the mechanism of oxygen binding by respiratory metallo-proteins and by organo-metallic complexes. (2) Biochemical mechanisms of trace metal toxicity. (3) Characterization of structure and function of trace metal-binding proteins in marine crustacea.

Brouwer, M., and Brouwer-Hoexum, T. 1985. Mechanism of Cu(II) and Hg(II) induced loss of red blood cell deformability. *Fed. Proc.* 44:2620.

Brouwer, M.; Whaling, P.; and Engel, D. 1986. Copper-metallothioneins in the American lobster, *Homarus americanus*: Potential role as Cu(I) donors to apohemocyanin. *Environ. Health Perspect.* 65:93-100.

Engel, D. W., and Brouwer, M. 1987. Metal regulation and molting in decapod crustaceans: Metallothionein function in metal metabolism. *Biol. Bull.* (In press.)

Dr. Robert Cashon. Effect of Metabolic Intermediates on Hemoglobin Function.

Being investigated are the effects of metabolites on the oxygen binding properties of normal and abnormal human hemoglobins and on fish hemoglobins.

Cashon, R. 1981. The Malate Dehydrogenase Isozymes and Allozymes of *Fundulus heteroclitus*. The Johns Hopkins University Ph.D. dissertation.

Focesi, A.; Cashon, R.; Bonaventura, C.; and Bonaventura, J. 1983. Allosteric interactions of nicotinamide nucleotides and EDTA with human hemoglobin. *Fed. Proc.* 42:2030.

Dr. John D. Costlow. Crustacean Development.

Much of the research in developmental biology deals with the culture of invertebrate larvae under controlled conditions in the laboratory, from hatching until the juvenile stages are reached. The availability of numerous larvae of known species, age, and stage of development has led to studies on the extent to which environmental factors within the marine environment affect rates of development, survival, and morphological abnormalities. In addition to studying the effects of natural environmental factors, research is under way to determine the effects of pollutants on larval development of marine crustacea. The developmental biology program also includes studies on the physiology of crustacean larvae and the factors involved in regulation of molting, rate of development, and metamorphosis during larval development.

A second major area of research interest involves the hormonal and physiological factors regulating barnacle development, settling, and metamorphosis. Present studies include the identification of naturally occurring substances in other marine organisms which inhibit or prevent the settlement of acorn barnacles and the mechanisms of detection by the larvae of these compounds.

Costlow, J. D. 1983. Coastal management in the United States of America. In *Proceedings of an International Seminar on Coastal Management*, sponsored by UNEP/SEMA/CIRM/CNPq/FINEP/ABES, Rio de Janeiro, 24-26 October 1983.

Rittschof, D.; Hooper, I. R.; and Costlow, J. D. 1986. Barnacle settlement inhibitors from sea pansies (*Renilla reniformis*). *Bull. Mar. Sci.* 39(2):376-382.

Costlow, J. D., and Tipper, R. C., eds. 1984. Marine biodeterioration: An interdisciplinary study. In *Proceedings of the Symposium on Marine Biodeterioration*, Uniformed Services, University of Health Sciences, 20-23 April 1981, 408 pp. Copyright 1984 U.S. Naval Institute Press, Annapolis, Maryland.

Dr. Richard B. Forward, Jr. Physiological Ecology.

This laboratory investigates the behavior and physiology of estuarine and coastal zooplankton. This includes the photobehavior, photophysiology, biological rhythms, diurnal vertical migration, and horizontal migration of crustacean larvae. Past students have worked with crustaceans and chaetognaths on the effects of temperature, salinity, and feeding on phototaxis and geotaxis, salinity perception, polarized light perception, and field studies of horizontal and vertical distributions as related to environmental factors.

Additional studies involve rhythms in egg hatching by crustaceans. Types of rhythms, flexibility, and the involvement of peptide pheromones are being considered.

Forward, R. B., Jr. 1985. Behavioral responses of larvae of the crab *Rhithropanopeus harrisi* (Brachyura: Xanthidae) during diel vertical migration. *Mar. Biol.* 90:9-18.

Forward, R. B., Jr. 1986. A reconsideration of the shadow response of a larval crustacean. *Mar. Behav. Physiol.* 12:93-113.

Rittschof, D.; Forward, R. B., Jr.; and Mott, D. 1985. Larval release in the crab *Rhithropanopeus harrisi*: Chemical cues from hatching eggs. *Chem. Sens.* 10:567-577.

Dr. Donald J. Gerhart. Chemical Ecology and Chemical Systematics.

(1) Studies of allelochemicals in gorgonian corals. (2) Predator-prey interactions and the role of allelochemicals. (3) The role of secondary compounds in the interactions between fish, snails and soft corals.

Gerhart, D. J. 1984. Prostaglandin A₂: An agent of chemical defense in the Caribbean gorgonian *Plexaura homomalla*. *Mar. Ecol. Progr. Ser.* 19:181-187.

Gerhart, D. J. 1986. Prostaglandin A₂ in the Caribbean gorgonian *Plexaura homomalla*: Evidence against allelopathic and antifouling roles. *Biochem. Syst. Ecol.* (In press.)

Gerhart, D. J. 1987. Chemical ecology and the search for marine anti-foulants: Studies of a predator-prey symbiosis. In *Proceedings of the International Society of Chemical Ecology*, Inc., University of Hull, England, July 13-17, 1987.

Dr. John Gutknecht. Membrane Physiology.

This laboratory studies the mechanisms of solute and water transport through phospholipid bilayer membranes which are used as models of biological membranes. Some of the specific questions sought include the following: (1) How do heavy metals, e.g., Hg and Cd, permeate biological membranes? (2) What is the mechanism of action of thiocyanate and other drugs on the gastric mucosa? (3) How do water and small nonelectrolytes traverse biological membranes? (4) What is the mechanism of proton and hydroxyl ion transport through lipid bilayer membranes? (5) What are the rate limiting steps in weak acid/base transport through membranes?

Gutknecht, J. 1981. Inorganic mercury transport through lipid bilayer membranes. *J. Membr. Biol.* 61:61-66.

Gutknecht, J. 1984. Proton/hydroxide conductance through lipid bilayer membranes. *J. Membr. Biol.* 82:105-112.

Gutknecht, J., and Walter, A. 1982. SCN⁻ and HSCN transport through lipid bilayer membranes: A model for SCN⁻ inhibition of gastric acid secretion. *Biochem. Biophys. Acta* 685:233-240.

Dr. Irving Hooper. Biologically Active Marine Products and New Types of Anti-Fouling Surfaces.

We have isolated and characterized a series of bioactive compounds from marine organisms. These compounds inhibit barnacle settlement in nanogram amounts. We are applying immobilization chemistry to the development of unique biochemically modified surfaces and studying the effect of such surfaces on the fouling process.

Standing, J. D.; Hooper, I. R.; and Costlow, J. D. 1984. Inhibition and induction of barnacle settlement by natural products present in octocorals. *J. Chem. Ecol.* 10:823.

Rittschof, D.; Hooper, I. R.; and Costlow, J. D. 1985. Inhibition of barnacle settlement and behavior by natural products from whip corals, *L. virgulata*. *J. Chem. Ecol.* 11:551-563.

Keifer, P. A.; Rinehart, K. L.; and Hooper, I. R. 1986. Renilla foulins, antifouling diterpenes from the sea pansy *Renilla reniformis*. *J. Org. Chem.* 51:4450-4454.

Dr. Thomas C. Johnson. Geological Oceanography.

Research involves deep-sea sedimentation studies in the western North Atlantic and the application of oceanographic techniques to the study of sedimentation in large lakes. Present emphasis is upon Pleistocene paleocurrent studies and high-resolution seismic reflection profiling, side-scan SONAR, and sediment core analyses in Lakes Turkana and Malawi, East Africa.

Johnson, T. C.; Halfman, J. D.; Rosendahl, B. R.; and Leister, G. S. 1987. Climatic and tectonic effects on sedimentation in a rift-valley lake: Evidence from high-resolution profiles, Lake Turkana, Kenya. *Geol. Soc. Amer. Bull.* (In press.)

Johnson, T. C.; Lynch, E. L.; and Showers, W. F. 1987. Pleistocene fluctuations in the western boundary undercurrent on the Blake Outer Ridge. *Paleoceanogr.* (In press.)

Dr. Bruce E. Kenney. Algal Ecological Physiology.

Physiological ecology of photosynthesis by marine algae, specifically the influence of environmental conditions on photosynthetic production, is my primary area of interest. Understanding time scales of environmental variability is essential to determining the influence of such variations on photosynthetic performance.

Evaluation of fixed carbon partitioning under varying environmental conditions is a current goal. Biotechnological funding supports ongoing research on properties and production rate optimization of viscous polysaccharides from marine microalgae. Computer-aided data acquisition devices are being developed for rapid laboratory and field evaluation of several aspects of primary production.

Kenney, B. E., and Ramus, J. 1983. Short-term variations in seaweed photosynthetic quotients. (*Abstr.* 21F-10, ASLO winter meeting.) *EOS* 64(52):1042.

Kenney, B. E.; Litaker, W.; Duke, C. S.; and Ramus, J. 1987. Community metabolism in a shallow tidal estuary. *Estuarine Coastal Shelf Sci.* (In review.)

Litaker, W.; Duke, C. S.; Kenney, B.; and Ramus, J. 1987. High frequency variability and phytoplankton dynamics in a well-mixed estuary. *Mar. Biol.* (In press.)

Dr. William W. Kirby-Smith. Marine Ecology.

Funded research projects include: (1) a study of the fates and effects of pesticides and herbicides in estuaries; (2) the response of invertebrates, fish and birds to open marsh water management for mosquito control; and (3) aerial photographic mapping of the North Carolina estuarine sanctuaries. In addition, I work on problems associated with feeding and growth of suspension feeders in relation to quantity and quality of food.

Kirby-Smith, W. W., and Ustach, J. 1986. Resistance to hurricane damage of an epifaunal community on the continental shelf off North Carolina. *Estuarine Coastal Shelf Sci.* (In press.)

Ustach, J.; Barber, R. T.; and Kirby-Smith, W. 1986. Effect of watershed modification on a small coastal plain estuary. In *Estuarine Variability; Proceedings of the Estuarine Research Federation*, ed. D. Wolfe, pp. 177-192. New York: Academic Press.

Dr. David R. McClay. Cell-Cell Interaction in the Sea Urchin Embryo.

A number of molecules have been found that participate in the morphogenetic cell rearrangements during early development of the sea urchin embryo. The research efforts of this lab are to characterize the molecules involved, to determine their function, and to examine how the different steps of morphogenesis are interrelated in expression of pattern. The tools of the lab incorporate monoclonal antibody technology, biochemistry, immunochemistry, and molecular biology.

McClay, D. R., and Ettensohn, C. A. 1987. Cell recognition during sea urchin gastrulation. In *45th Developmental Biology Symposium*, pp. 111-128. New York: A. R. Liss.

Ettensohn, C. A., and McClay, D. R. 1987. A new method for isolating primary mesenchyme cells of the sea urchin embryo: Panning on wheat germ agglutinin-coated dishes. *Exp. Cell Res.* 168:431-438.

Wessel, G. M., and McClay, D. R. 1987. Gastrulation in the sea urchin requires deposition of collagen in the extracellular matrix. *Dev. Biol.* 121:149-165.

Dr. Cynthia H. Pilskaln. Marine Sedimentology.

Current research focuses on: (1) mechanisms of episodic and seasonal sedimentation in Lake Malawi, East Africa; (2) the role of zooplankton fecal aggregate transport in biogeochemical particle fluxes to the deep-sea; and (3) particulate flux and pelagic deposition of shoal-water carbonates in the Bahamas. Emphasis is on data obtained from seismic reflection profiles, sediment trap samples, sediment cores, suspended particle profiles and current meter measurements.

Pilskaln, C. H.; Neumann, A. C.; and Bane, J. M. 1985. Periplatform carbonate flux in Northwest Providence Channel, Bahamas: Results from a 2-month sediment trap experiment. *EOS* 66:1293.

Pilskaln, C. H., and Honjo, S. 1986. The fecal pellet fraction of biogeochemical particle fluxes to the deep-sea. In *Global Biogeochem. Cycles*, vol. I. (In press.)

Dr. J. Ramus. Algal Ecological Physiology.

We study physical forcing of primary productivity in a coastal plains estuary characterized by high flushing rates and variable nutrient inputs. To do so requires time-intensive sampling on the estuary—including selected hydrology, water chemistry, meteorology, and productivity parameters. Ultimately, the research seeks a match between species specific physiological response and the temporal frequency of nutrient availability, the phasing of the organism with its environment.

Biotechnological research includes extracellular polysaccharides produced by marine microphotoautotrophs. Two aspects are under investigation: (1) environmental regulation of carbon partitioning, i.e., the diversion of newly fixed carbon from growth (new photosynthetic machinery) to disposable heteropolysaccharides (viscoelastic biopolymers), and (2) drag reducing properties of the biopolymers in pipe flow.

A third area of investigation is photoacclimation in seaweeds. Of specific interest are macromolecular changes in the photosynthetic apparatus, the dynamic range of change and the effect of change on growth rate.

Ramus, J. 1986. Rhodophyte unicells: Biopolymer, physiology and production. In *Algal Biomass Technologies*, eds. W. Barclay and R. P. McIntosh. *Beih. Nova Hedwigia* 83:51-55.

Duke, C. S.; Lapointe, B. E., and Ramus, J. 1986. Effect of light on growth, RuBPCase activity and chemical composition of *Ulva* species (Chlorophyta). *J. Phycol.* 22:362-370.

Litaker, W.; Duke, C. S.; Kenney, B. E.; and Ramus, J. 1987. Short-term environmental variability and phytoplankton abundance in a shallow tidal estuary. I. Winter and summer. *Mar. Biol.* (In press.)

Dr. Daniel Rittschof. Chemical Ecology.

(1) Basic studies of the chemical nature and functions of pheromones and other substances used in resource location. (2) Contact chemoreception, chemical induction and

inhibition of larval settlement. (3) Isolation and purification of native bioactive molecules. (4) Chemical ecology of terrestrial crabs.

Rittschof, D.; Hooper, I. R.; and Costlow, J. D. 1987. Barnacle settlement inhibitors from sea pansies (*Renilla reniformis*). *Bull. Mar. Sci.* 39(2):376-382.

Rittschof, D., and Bonaventura, J. 1986. Macromolecular cues in marine systems. *J. Chem. Ecol.* 12(5):1013-1023.

Rittschof, D., and Sutherland, J. P. 1986. Field studies of olfaction in land hermit crabs. *J. Chem. Ecol.* 12(6):1273-1284.

Drs. J. David Robertson and John Z. Young. Learning and Memory.

This laboratory is investigating the cellular basis of learning and memory using *Octopus vulgaris* as the experimental animal. The work is now concentrated on tactile learning and memory. Previous work has shown that octopus is a very favorable animal for this research because tactile learning and memory is localized in the posterior buccal and subfrontal lobes of the supraesophageal lobe of its brain. Surgical removal of these parts of the brain completely abolish tactile learning and memory. The drug Cytochalasin B, which has the peculiar property of causing disruption of actin dependent portions of the cytoskeleton of cells, has been found to be as effective as surgical excision in blocking tactile learning and memory in this animal. The animal is being studied behaviorally and the relevant parts of the brain are being studied structurally and biochemically using electron microscopy and various biochemical and immunological methods.

Robertson, J. D., and Lee P. 1986. A comparative biochemical study of the supra- and subesophageal divisions of octopus brain. *Soc. Neurosci. Abstr.* 12:754.

Robertson, J. D.; Young, J. Z.; Lee, P.; and Bock, C. 1987. Tactile learning in octopus is affected by Cytochalasin B. *Soc. Neurosci. Abstr.* (In press.)

Robertson, J. D.; Young, J. Z.; Lee, P.; and Bock C. 1987. Cellular basis of learning and memory in *Octopus vulgaris*. *Soc. Neurosci. Abstr.* (In press.)

Robertson, J.D.; Young, J. Z.; Lee, P. H.; Bock, C. B. 1987. Possible effects of Cytochalasin on memory in octopus. In *2nd World Conference of Neuroscience Abstr.* (Budapest, August 16-21, 1987.) (In press.)

Allen, A.; Michels, J.; and Young, J. Z. 1985. Memory and visual discrimination in squids. *Mar. Behav. Physiol.* 11:271-282.

Allen, A.; Michels, J.; and Young, J. Z. 1986. Possible interactions between visual and tactile memories in octopus. *Mar. Behav. Physiol.* 12:81-97.

Michels, J.; Robertson, J. D.; and Young, J. Z. 1987. Can conditioned aversive tactile stimuli affect extinction of visual responses in octopus? *Mar. Behav. Physiol.* (In press.)

Dr. Richard B. Searles. Seaweed Systematics.

Biology of seaweeds with emphasis on systematics, ecology, and biogeography of tropical algae from North Carolina and the Caribbean.

Searles, R. B. 1984. Seaweed biogeography of the mid-Atlantic coast of the United States. *Helgolander Meeresunter.* 38:259-271.

Searles, R. B., and Ballantine, D. L. 1986. *Dudresnaya puertoricensis* sp. nov. (Dumontiaceae, Gigartinales, Rhodophyta). *J. Phycol.* 22:389-394.

Peckol, P., and Searles, R. B. 1983. Effects of seasonality and disturbance on population development in a Carolina continental shelf community. *Bull. Mar. Sci.* 33(1):67-86.

Dr. J. Bolling Sullivan. Comparative Protein Biochemistry.

The primary emphasis in the biochemical studies involves research on the structure, function, and evolution of protein molecules. Proteins, especially those involved in the transport of molecular oxygen (hemoglobin, hemocyanin, chlorocruorin, and hemerythrin), are being isolated and their structural and functional properties elucidated. These studies are intended to illustrate how protein molecules function, as well as how

they have evolved. Studies of protein polymorphisms are intended to illustrate gene flow among populations and offer insights into the adaptive strategies of marine organisms.

Sullivan, B.; Pennell, L.; Hutchison, B.; and Hutchings, R. 1983. Genetics and evolution of the hemocyanin multigene. I. Genetic variability in *Uca pugnator* from Beaufort, N.C. *Comp. Biochem. Physiol.* 76:615-618.

Sullivan, B.; Miller, K.; Singleton, K.; Scheer, A. G.; and Williams, A. B. 1984. Electrophoretic analyses of hemocyanins from four species of mud crabs, genus *Panopeus*, with observations on the ecology of *P. obesus*. *Fish. Bull.* (In press.)

Dr. John Sutherland. Marine Ecology.

The research attempts to identify and understand the processes which result in the temporal and spatial patterns in species abundance in intertidal and subtidal, epibenthic communities. Changes in the adult populations are followed with point sampling and photographic techniques. The approach is experimental to the extent that species are removed or excluded from the community to assess their importance in community structure and function. This work was initiated with estuarine animal populations near Beaufort. Comparable work is now being done on the plant and animal populations in the rocky substrates of southern Chile and the Pacific coast of Central America.

Sutherland, J. P. 1981. The fouling community at Beaufort, North Carolina: A study in stability. *Am. Nat.* 118:499-519.

Sutherland, J. P., and Ortega, S. 1985. Competition conditional on recruitment and temporary escape from predators on a tropical rocky shore. *J. Exp. Mar. Biol. Ecol.* 95:155-166.

Dr. Joseph Ustach. Marsh Ecology.

Structure and functioning of wetlands, especially salt marshes, within the estuarine system. Major areas of interest are: primary production; decomposition; detritus formation and utilization; habitat utilization; microbial-meiofaunal interactions.

Ustach, J. F. 1982. Algae, bacteria and detritus as foods for the harpacticoid copepod, *Heteropsyllus pseudonunni* Coull and Palmer. *J. Exp. Mar. Biol. Ecol.* 64:203-214.

Heinle, D. R.; Flemer, D. A.; and Ustach, J. F. 1976. Contribution of tidal marshlands to mid-Atlantic estuarine food chains. In *Estuarine Processes*, ed. M. Wiley, pp. 309-320. New York: Academic Press.

Dr. Stephen A. Wainwright. Functional Morphology and Biomechanics.

Plants and animals have specialized structural materials, skeletal elements, and entire supportive systems that permit, control, and limit their posture, movement, and behavior in response to forces of gravity, flow, pressure, and muscle contraction. At Duke University Marine Laboratory we are studying the mechanical design of (1) swimming in sharks, rays, marlin, and king mackerel, (2) bending and pulling (to open oysters) by starfish, (3) movement and holding position on surf-beaten beaches by the coquina clam, and (4) stabilization of sediment by blue-green bacterial mats.

Wainwright, S. A. 1983. To bend a fish. In *Fish Biomechanics*, eds. P. W. Webb and D. Wiehs, pp. 68-91. New York: Praeger.

Koehl, M. A. R., and Wainwright, S. A. 1977. Mechanical adaptations of a giant kelp. *Limnol. Oceanogr.* 22:1067-1071.

Hebrank, M. R., and Hebrank, J. H. 1986. The mechanics of fish skin: Lack of an "external tendon" role in two teleosts. *Biol. Bull.* 171:236-247.

Research Facilities

Visiting investigators may obtain research space throughout the year. Each research laboratory building is air-conditioned and equipped with running seawater through a PVC system. There are tanks, water tables, aquaria, autoclaves, ovens, and outdoor continuous-flow growth facilities. In addition to commonly used laboratory equipment,

the following are available: refrigerated centrifuges, fluorometers, spectrophotometers, balances, pH meters, hoods, liquid scintillation counter, constant temperature equipment, and HPLC. There is a complete sedimentological research laboratory that is equipped for state-of-the-art chemical and size analyses. The Marine Laboratory also maintains darkrooms, a well-equipped workshop, a stock room, and a purchasing department.

As a result of funds provided by the National Science Foundation, the following new research equipment and systems are available to visiting investigators at Duke Marine Laboratory as well as to resident research personnel: water purification system, spectrophotometer, camera, recorder and accessories, spectrofluorometers, power supply, M-Drive, CRT screens, and a printer for the Compupro computer, a respirometer as well as accessory items for the existing underwater spectroradiometer.

In addition, the National Science Foundation has funded a number of general facility improvements such as renovations to the R/V *First Mate*, renovations to the seawater system, and updating the autoanalyzer to state-of-the-art equipment.

Funding made available by the Office of Naval Research has provided for a flow injection nutrient analyzer, IBM AT computer, and accessory items for the existing underwater spectroradiometer.

I. E. Gray Library-Auditorium. Located in the building are the 1,917 square feet auditorium, with stage, a library, the librarian's office, two seminar rooms, a receiving room, a kitchenette, and two closed carrels. The auditorium has a seating capacity of approximately 300 and is suitable for lectures, seminars, symposia, and small regional or national meetings. Inquiries concerning use of auditorium or seminar room space should be addressed to Personnel and Auxiliaries, Duke University Marine Laboratory, Beaufort, North Carolina 28516.

The building houses the Pearse Memorial Library which contains about 53,000 catalogued reference books and journals, 155 current journals, and 23,000 reprints. There are also expedition reports in oceanography, a microfilm library of graduate student theses based on research at the laboratory, and a microfilm reader. Other materials may be obtained by special delivery system from the Perkins Library on the Durham campus or through the interlibrary loan service with other libraries in the United States.

Natural History Resource Center. In the spring of 1987 the Natural History Resource Center (formerly referred to as the "Museum") moved from the Bookhout Research Laboratory to newly renovated space in Laboratory 5. Floor space for the Natural History Resource Center (NHRC) was doubled and a research laboratory, reading area, and computational facilities were added. The NHRC preserves and disseminates knowledge concerning ecological systems and the distribution and abundance of marine plants and animals. The center consists of an extensive reference collection of marine organisms (the museum), a library of taxonomic references and ecological publications, and a research laboratory designed to facilitate the collection, preservation and identification of marine organisms. The center provides students, researchers, and laymen with advice on the natural history of North Carolina's marine ecosystems. With its growth in size and function, the NHRC plans to expand its service through the publication of a technical reports and monographs series.

Computing Facilities. The Marine Laboratory operates a Compupro System 8/16 computer for use by staff, students, and visiting investigators. The computer has 1 MB of memory and is operated under the MC-DOS operating system. The BASIC, FORTRAN, and Pascal programming languages are available, as well as application programs for word processing, statistical analysis, data base management, and graphics. A 21Mb hard disk drive and two eight-inch floppy disk drives are used for data storage. There are a variety of video terminals, graphics terminals, printers and plotters.

The Marine Laboratory is also the site of one of Duke University's public IBM clusters. Three work stations are networked to an IBM/AT which has a 30Mb hard disk drive. The

BASIC language is available along with programs for word processing and data base management. Statistical analysis is by means of a PC/SAS, installed on the hard disk drive. Each station is an IBM/XT with two 5.25 inch floppy disks, 640K memory, and math coprocessor. Output is by means of two IBM Proprinters.

R/V Cape Hatteras. The Duke/University of North Carolina Oceanographic Consortium operates a 135-foot research vessel, the R/V *Cape Hatteras*. Although designed as a coastal zone research vessel, the ship operates both on the continental shelf and in the deep sea in the western North Atlantic, concentrating in the region between Nova Scotia on the north, the Caribbean on the south, and Bermuda to the east. The ship is a member of the academic research fleet supported by the National Science Foundation for the purpose of providing oceanographic research opportunities to investigators. Inquiries concerning use of the research vessel should be addressed to the Duke/UNC Oceanographic Consortium, Marine Laboratory, Duke University, Beaufort, North Carolina 28516.

Financial Information

Figures quoted in this section are projections and may be subject to change in many cases without prior notice. All rates are effective 10 May 1987 to 8 May 1988.

Room and Board Costs. All Duke University Marine Laboratory visitors who stay on the island will pay a room and board fee as follows: \$23 per day (1-6 days); \$144 per week (7 + days). Allowances will be made only for meals missed at the beginning and end of the stay.

Boat Rentals. The following boats are available at the laboratory for collecting and instructional activities. Charges apply to all research and teaching activities.

Boat Type	Charges
50 ft. cruiser/trawler (<i>First Mate</i>)*	\$40 per hour
20 ft. outboard runabouts	\$20 per hour
16 ft. outboard runabout	\$15 per hour
Outboard skiffs	\$ 5 per hour

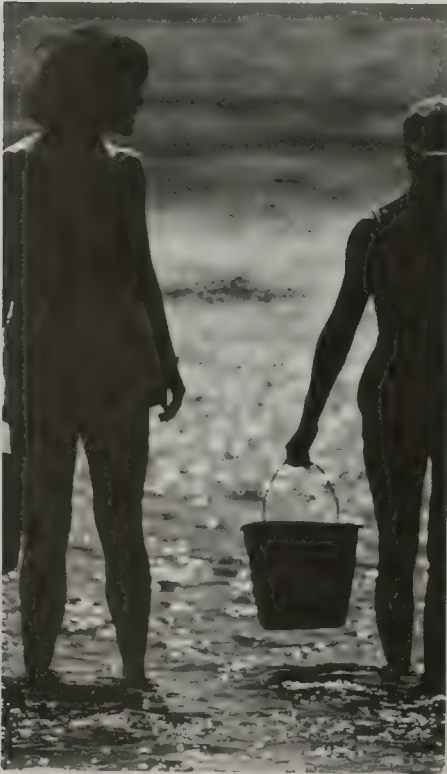
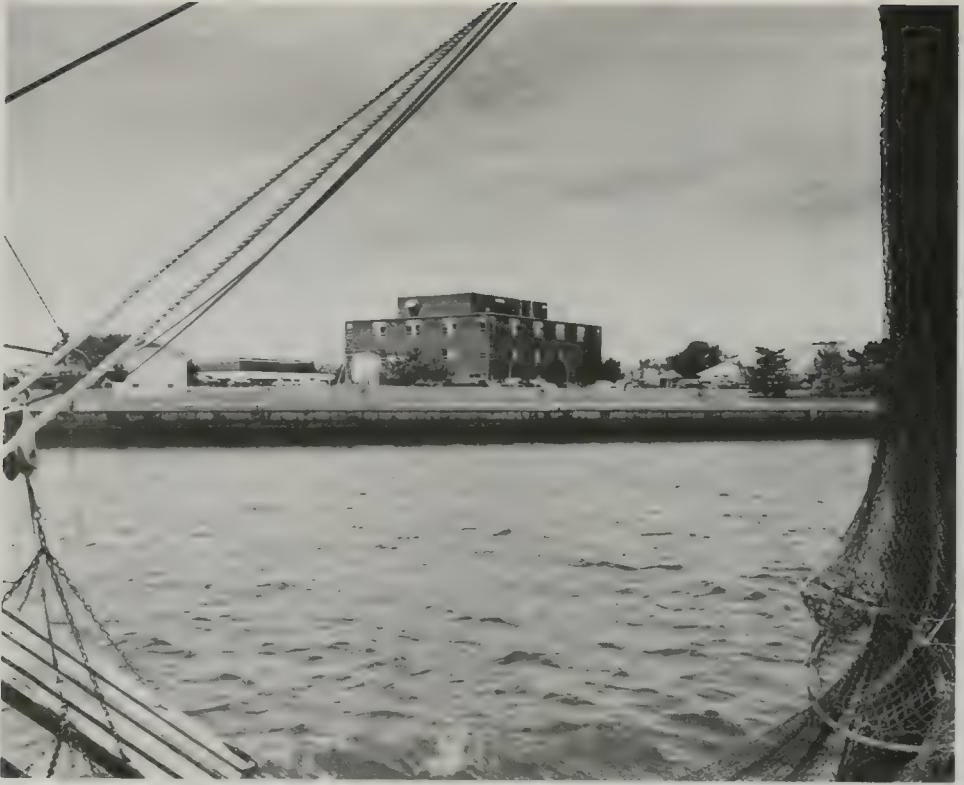
*Crew required for safety of user and vessel.

These rates are intended to partially defray the cost of operating and maintaining these boats.

These boats may be scheduled by visiting researchers through the Maintenance Office; however, first priority must be given to classes when they are in session. Use of Duke University Marine Laboratory vessels for any sponsored research will be subject to charges.

Research Space. Research space, including seawater tables, is available on a limited basis for Duke University Marine Laboratory visitors. Research space rent for all users is \$2.25 per square foot per month. Typical size of laboratory-office area is 100 square feet. Requests for laboratory space, office space, and/or seawater tables should be sent to Personnel and Auxiliaries, Duke University Marine Laboratory, Beaufort, North Carolina 28516.

Teaching Space. Various size classrooms are available throughout the year; however, first priority must be given to Marine Laboratory classes when they are in session. Cost for such space is \$25-\$35/day depending upon which laboratory is utilized. Requests for these teaching areas, including class needs such as seawater tables, collecting equipment, etc., should be sent to Personnel and Auxiliaries, Duke University Marine Laboratory, Beaufort, North Carolina 28516.



**APPLICATION FOR ENROLLMENT IN THE DUKE UNIVERSITY MARINE LABORATORY
UNDERGRADUATE MARINE SCIENCES PROGRAM**

Please fill out completely; type or print.

Please specify: Spring Semester _____
Year _____

Date _____

Fall Semester _____
Year _____

1. Mr., Ms. _____
Last First Middle

2. Social Security Number _____

3. Date of Birth: Month _____ Day _____ Year _____

4. A. Current full mailing address:

Street or P.O. Box _____

City _____ State _____ Zip _____

Telephone Number (including area code) _____

B. Permanent or home full mailing address:

Street or P.O. Box _____

City _____ State _____ Zip _____

Telephone Number (including area code) _____

5. Name and full mailing address of parents or guardian:

Name _____ Relationship _____

Street or P.O. Box _____

City _____ State _____ Zip _____

Telephone Number (including area code) _____

6. **DUKE STUDENT** (only)

A. Trinity _____ Engineering _____ Other (specify) _____

B. Major _____

C. Class (e.g., junior, senior) at time of enrollment at DUML _____

D. Expected date of graduation _____

NOTE: Duke Students must obtain the approval of their assigned departmental adviser on this application.

E. Advisor's signature _____ Date _____

7. **NONDUKE STUDENT** (Students from institutions other than Duke who are attending for the semester only and who will be classified as special, nondegree students)

A. Name and address of home institution:

City _____ State _____ Zip _____

B. Major _____

C. Class (e.g., junior, senior) at time of enrollment at DUML _____

D. Expected date of graduation _____

E. The following person has been requested to mail a letter of recommendation to the Admissions Office of the Duke University Marine Laboratory:

Name _____ Position _____

Institution _____

F. Transcript(s) will be sent by the following institution(s):

G. List courses currently in progress (which would not yet appear on a transcript):

H. Have you ever been placed on probation or suspended or dismissed from any school?

No _____ Yes _____ (If yes, please explain below.)

Mail Application to:

**Admissions
Duke University Marine Laboratory
Beaufort, North Carolina 28516**

**APPLICATION FOR ENROLLMENT IN THE DUKE UNIVERSITY MARINE LABORATORY
SUMMER SESSION**

Fill out completely; type or print.

Date _____

Mr. Ms. _____
Last First Middle

Date of Birth: Month _____ Day _____ Year _____

Social Security Number _____

Current full mailing address:

Street or P.O. Box _____

City _____ State _____ Zip _____

Telephone Number (including area code) _____

Permanent or home full mailing address:

Street or P.O. Box _____

City _____ State _____ Zip _____

Telephone Number (including area code) _____

Name and full mailing address of parents or guardian:

Name _____ Relationship _____

Street or P.O. Box _____

City _____ State _____ Zip _____

Telephone Number (including area code) _____

DUKE STUDENT

Undergraduate: Trinity _____ Engineering _____ Other (please specify) _____

Graduate: Grad. Sch. Arts & Sci. _____ Sch. Forestry & Env. Studies _____

Other (please specify) _____

Class (e.g., junior, 1st yr. M.S.) at time of enrollment at DUML _____

Expected date of graduation _____

Major _____

NONDUKE STUDENT (Attending Summer Session only)

Unclassified: Prebaccalaureate _____ Class (e.g., junior) _____

Postbaccalaureate _____ Class (e.g., 1st yr. M.S.) _____

Major _____

Expected date of graduation _____

If presently attending, list name and address of school: _____

Have you previously attended Duke: No _____ Yes _____ (Give dates): _____

Have you received a degree from Duke: No _____ Yes _____ (Give dates): _____

ALL STUDENTS (Applying to courses numbered 100 or higher)

List courses currently in progress (which would not yet appear on a transcript):

List other colleges and/or universities attended and degree(s) received: _____

EACH APPLICANT IS REQUIRED TO COMPLETE AND SUBMIT THIS APPLICATION BLANK AND TRANSCRIPT(S) (transcript required of students applying to courses numbered 100 or higher) OF ACADEMIC WORK COMPLETED TO DATE TO THE ADMISSIONS OFFICE. NOTE: A maximum of one 6 graduate unit or 1½ course program (6 semester hours) will be permitted per term (unless appropriate approval is obtained); FIRST AND SECOND CHOICES SHOULD BE INDICATED. LIST COURSE(S) DESIRED BELOW:

FIRST TERM:

Course Number	Course Title
1. _____	_____
2. _____	_____

(DUKE STUDENTS ONLY) Approval of assigned adviser; after May 3, Dean's approval required.

Adviser's/Dean's Signature _____ Date _____

SECOND TERM:

Course Number	Course Title
1. _____	_____
2. _____	_____

(DUKE STUDENTS ONLY) Approval of assigned adviser; after May 3, Dean's approval required.

Adviser's/Dean's Signature _____ Date _____

THIRD TERM:

Course Number	Course Title
1. _____	_____
2. _____	_____

(DUKE STUDENTS ONLY) Approval of assigned adviser; after May 3, Dean's approval required.

Adviser's/Dean's Signature _____ Date _____

Mail Application to:

Admissions
Duke University Marine Laboratory
Beaufort, North Carolina 28516

**APPLICATION FOR ENROLLMENT IN THE DUKE UNIVERSITY MARINE LABORATORY
UNDERGRADUATE MARINE SCIENCES PROGRAM**

Please fill out completely; type or print.

Please specify: Spring Semester _____
Year _____

Date _____

Fall Semester _____
Year _____

1. Mr., Ms. _____
Last First Middle

2. Social Security Number _____

3. Date of Birth: Month _____ Day _____ Year _____

4. A. Current full mailing address:

Street or P.O. Box _____

City _____ State _____ Zip _____

Telephone Number (including area code) _____

B. Permanent or home full mailing address:

Street or P.O. Box _____

City _____ State _____ Zip _____

Telephone Number (including area code) _____

5. Name and full mailing address of parents or guardian:

Name _____ Relationship _____

Street or P.O. Box _____

City _____ State _____ Zip _____

Telephone Number (including area code) _____

6. **DUKE STUDENT** (only)

A. Trinity _____ Engineering _____ Other (specify) _____

B. Major _____

C. Class (e.g., junior, senior) at time of enrollment at DUML _____

D. Expected date of graduation _____

NOTE: Duke Students must obtain the approval of their assigned departmental adviser on this application.

E. Advisor's signature _____ Date _____

7. **NONDUKE STUDENT** (Students from institutions other than Duke who are attending for the semester only and who will be classified as special, nondegree students)

A. Name and address of home institution:

City _____ State _____ Zip _____

B. Major _____

C. Class (e.g., junior, senior) at time of enrollment at DUML _____

D. Expected date of graduation _____

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Name _____ Position _____

Institution _____

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G. List courses currently in progress (which would not yet appear on a transcript):

H. Have you ever been placed on probation or suspended or dismissed from any school?

No _____ Yes _____ (If yes, please explain below.)

Mail Application to:

**Admissions
Duke University Marine Laboratory
Beaufort, North Carolina 28516**

APPLICATION FOR ENROLLMENT IN THE DUKE UNIVERSITY MARINE LABORATORY
SUMMER SESSION

Fill out completely; type or print.

Date _____

Mr. Ms. _____
Last First Middle

Date of Birth: Month _____ Day _____ Year _____

Social Security Number _____

Current full mailing address:

Street or P.O. Box _____

City _____ State _____ Zip _____

Telephone Number (including area code) _____

Permanent or home full mailing address:

Street or P.O. Box _____

City _____ State _____ Zip _____

Telephone Number (including area code) _____

Name and full mailing address of parents or guardian:

Name _____ Relationship _____

Street or P.O. Box _____

City _____ State _____ Zip _____

Telephone Number (including area code) _____

DUKE STUDENT

Undergraduate: Trinity _____ Engineering _____ Other (please specify) _____

Graduate: Grad. Sch. Arts & Sci. _____ Sch. Forestry & Env. Studies _____

Other (please specify) _____

Class (e.g., junior, 1st yr. M.S.) at time of enrollment at DUML _____

Expected date of graduation _____

Major _____

NONDUKE STUDENT (Attending Summer Session only)

Unclassified: Prebaccalaureate _____ Class (e.g., junior) _____

Postbaccalaureate _____ Class (e.g., 1st yr. M.S.) _____

Major _____

Expected date of graduation _____

If presently attending, list name and address of school: _____

Have you previously attended Duke: No _____ Yes _____ (Give dates): _____

Have you received a degree from Duke: No _____ Yes _____ (Give dates): _____

ALL STUDENTS (Applying to courses numbered 100 or higher)

List courses currently in progress (which would not yet appear on a transcript):

List other colleges and/or universities attended and degree(s) received: _____

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FIRST TERM:

Course Number	Course Title
1. _____	_____
2. _____	_____

(DUKE STUDENTS ONLY) Approval of assigned adviser; after May 3, Dean's approval required.

Adviser's/Dean's Signature _____ Date _____

SECOND TERM:

Course Number	Course Title
1. _____	_____
2. _____	_____

(DUKE STUDENTS ONLY) Approval of assigned adviser; after May 3, Dean's approval required.

Adviser's/Dean's Signature _____ Date _____

THIRD TERM:

Course Number	Course Title
1. _____	_____
2. _____	_____

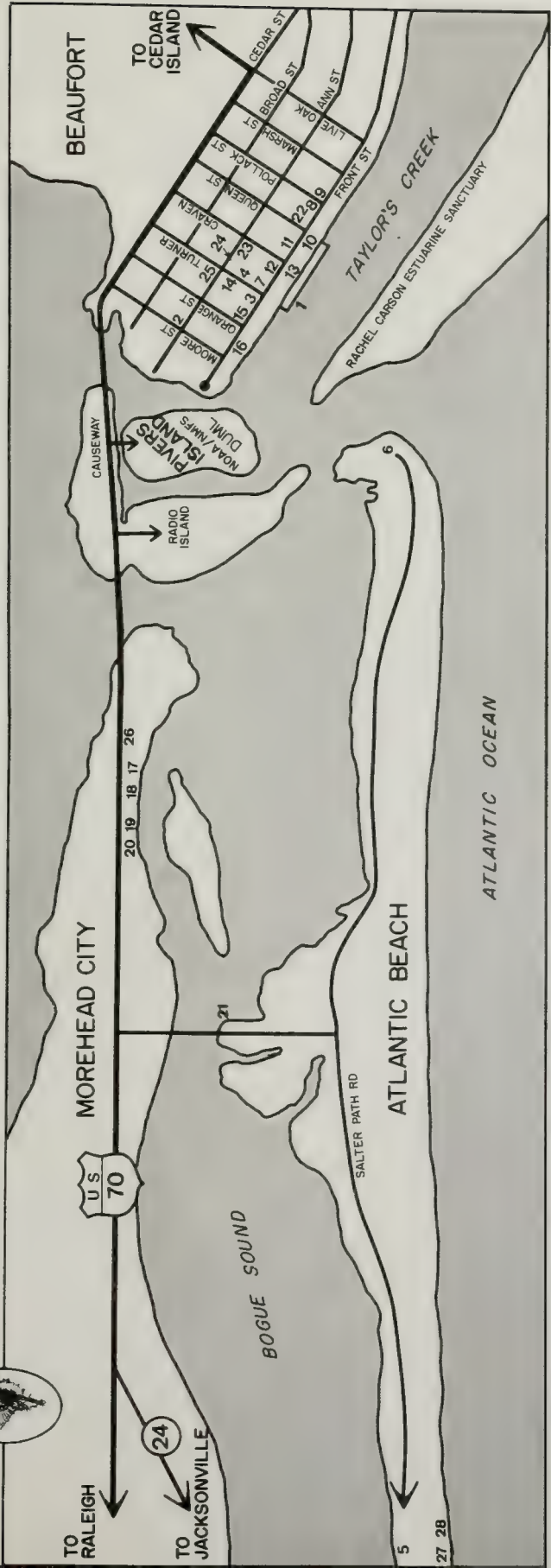
(DUKE STUDENTS ONLY) Approval of assigned adviser; after May 3, Dean's approval required.

Adviser's/Dean's Signature _____ Date _____

Mail Application to:

Admissions
Duke University Marine Laboratory
Beaufort, North Carolina 28516

DUKE UNIVERSITY MARINE LABORATORY AND ENVIRONS



POINTS OF INTEREST	RESTAURANTS	LODGING	MILEAGES FROM DUMI TO:
1 BOARDWALK	10 BEAUFORT HOUSE	15 THE CEDARS	NEW BERN AIRPORT 37.5
2 COSTLOW HOME (201 ANN ST.)	11 MIKE'S	22 INLET INN	JACKSONVILLE AIRPORT 60
3 N.C. MARITIME MUSEUM	12 CLAWSON'S	23 LANGDON HOUSE	KINSTON AIRPORT 80
4 BEAUFORT RESTORATION	13 DOCK HOUSE	24 SHOTGUN HOUSE	WILMINGTON AIRPORT 85
5 N.C. MARINE RESOURCES CENTER	14 NET HOUSE	25 CAPT'S QUARTERS	RALEIGH/DURHAM AIRPORT . . . 160
6 FT. MACON STATE PARK	15 THE CEDARS	26 JEFFERSON	DURHAM 180
7 FIRST CITIZENS BANK	16 SPOUTER INN	27 HOLIDAY INN	
8 BRANCH BANKING & TRUST	17 CHARTER	28 ATLANTIS	
9 U.S. POST OFFICE	18 SANITARY		
	19 CAPT. BILL'S		
	20 OTIS' FISH HOUSE		
	21 CHANNEL MARKER		



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Duke Marine Laboratory
Beaufort, NC 28516

bulletin of
Duke University
1988-89

The Divinity School



bulletin of
Duke University
1988-89

The Divinity School

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The information in the bulletin applies to the academic year 1988-89 and is accurate and current, to the best of our knowledge, as of February, 1988. The University reserves the right to change programs of study, academic requirements, lecturers, teaching staffs, the announced University calendar, and other matters described in the bulletin without prior notice, in accordance with established procedures.

Duke University does not discriminate on the basis of race, color, national and ethnic origin, sex, handicap, or age in the administration of educational policies, admission policies, financial aid, employment, or any other University program or activity. It admits qualified students to all the rights, privileges, programs, and activities generally accorded or made available to students. For further information, call Dolores L. Burke, Equal Opportunity Officer, (919) 684-8111.

For further information about the Divinity School, call (919) 684-3234.

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Calendar of the Divinity School

Fall, 1988

August	
24	Wednesday—Orientation for new students begins
25	Thursday—Orientation continues
26	Friday, 9:00-10:30 A.M.—Registration for returning students 10:30-12:00 noon—Registration for new students
29	Monday, 12:00 noon—Fall semester classes begin
29	Monday—Drop/add period begins
30	Tuesday, 10:00 A.M.—Divinity School Opening Convocation—Duke University Chapel
September	
9	Friday, 12:00 noon—Drop/add period ends
October	
14	Friday, 4:00 P.M.—Last day to withdraw with "W" 6:00 P.M.—Fall recess begins
19	Wednesday, 8:30 A.M.—Fall recess ends
26-27	Wednesday-Thursday—Registration for spring semester
31	Monday-Wednesday—Divinity School Convocation and Pastors' School, Gray Lectures and Hickman Lectures
November	
1-2	Divinity School Convocation and Pastors' School, Gray Lectures & Hickman Lectures
23	Wednesday, 1:00 P.M.—Thanksgiving recess begins
28	Monday, 12:00 Noon—Classes resume
December	
9	Friday—Fall semester classes end
13	Tuesday—Final examinations begin
16	Friday—Final examinations end

Spring, 1989

January	
10	Tuesday—Orientation for new students
11	Wednesday—Registration for new students; registration changes for returning students
12	Thursday, 8:30 A.M.—Spring semester classes begin—Drop/add period begins
25	Wednesday, 12:00 Noon—Drop/add period ends
March	
10	Friday, 4:00 P.M.—Last date to withdraw with "W"; 6:00 P.M.—Spring recess begins
20	Monday, 12:00 Noon—Spring classes resume
23	Maundy Thursday—Classes do not meet
24	Good Friday—Classes do not meet
29-30	Wednesday-Thursday—Registration for fall semester
April	
26	Wednesday, 10:00 A.M.—Divinity School Closing Convocation—Duke University Chapel
28	Friday—Spring semester classes end
May	
2	Tuesday—Final examinations begin
5	Friday—Final examinations end
13	Saturday, 6:30 P.M.—Divinity School Baccalaureate Service
14	Sunday, 10:00 A.M.—Commencement exercises

University Administration

GENERAL ADMINISTRATION

H. Keith H. Brodie, M.D., LL.D., *President*
Phillip A. Griffiths, Ph.D., *Provost*
Eugene J. McDonald, LL.M., *Executive Vice-President*
William G. Anlyan, M.D., D.Sc., *Chancellor*
Joel L. Fleishman, LL.M., *Vice-President*
J. Peyton Fuller, A.B., *Vice-President, Planning and Treasurer*
William J. Griffith, A.B., *Vice-President for Student Affairs*
John J. Piva, Jr., B.A., *Vice-President for Alumni Affairs and Development*
Patricia C. Skarulis, M.A., *Vice-President for Information Systems*
Andrew G. Wallace, M.D., *Vice-President for Health Affairs*
John F. Adcock, M.B.A., *Corporate Controller*
N. Allison Haltom, A.B., *Secretary of the University*

Divinity School Administration

EDUCATIONAL ADMINISTRATION

Dennis M. Campbell (1979), B.D., Ph.D., D.D., *Dean of the Divinity School*
Russell E. Richey (1986), B.D., Ph.D., *Associate Dean for Academic Programs*
B. Maurice Ritchie (1973), B.D., *Associate Dean for Student Life and Field Education*
Paula E. Gilbert (1980), M.Div., Ph.D., *Assistant Dean for Admissions and Student Life*
Wesley F. Brown (1981), M.Div., *Director of Development and Alumni Affairs*
W. Joseph Mann (1984), M.Div., S.T.M., *Director of Continuing Education*
Grant S. Shockley (1983), M.Div., Ed.D., *Director of Black Church Affairs*
Kelli Walker-Jones (1985), M.Div., *Associate Director of Admissions and Field Education*
Christopher Walters-Bugbee (1983), B.A., *Director of Communications*
Clara S. Godwin (1969), *Administrative Assistant for General Administration and Finance*
Wilson O. Weldon (1981), B.D., D.D., *Special Assistant to the Dean*

Division of Special Programs

Robert L. Wilson (1970), B.D., Ph.D., *Director, J. M. Ormond Center for Research, Planning, and Development*

Division of Advanced Studies

Stanley Hauerwas, Ph.D., *Director of Graduate Studies in Religion*

Library

Donn Michael Farris (1950), M.Div., M.S. in L.S., *Librarian*
Harriet V. Leonard (1960), M.Div., M.S. in L.S., *Reference Librarian*
Linda K. Gard, M.Div., *Circulation Librarian*
Susan A. Rogers, M.Div., *Assistant Circulation Librarian*
David M. Matzko, M.Div., *Assistant to the Librarian*

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Carter S. Askren, B.S., *Editorial Assistant*
Margaret Lois Blanton, *Administrative Secretary, Office of the Dean*
Anita Gail Chappell, *Faculty Secretary*
Mary P. Chestnut, *Secretary, Office of Black Church Affairs and Faculty Secretary*
Anne Cordts, *Administrative Secretary, Office of Continuing Education*
Sarah Freedman, M.A., *Faculty Secretary*
Maxie B. Honeycutt, *Financial Aid Assistant*
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Margie M. Meeler, *Secretary, Office of Student Life and Field Education*
Frances D. Parrish, *Staff Assistant*
Virginia Parrish, *Faculty Secretary*
Annie C. Ragan, *Faculty Secretary*
Marie Smith, *Secretary, Office of Development and Alumni Affairs and Faculty Secretary*
Betty Anne "Dink" Suddaby, *Secretary, Office of Admissions and Student Life*

FACULTY

†Lloyd Richard Bailey (1971), B.D., Ph.D., *Associate Professor of Old Testament*
Teresa Berger (1985), L.Th., M.Th., Ph.D., *Assistant Professor of Ecumenical Theology*
Dennis M. Campbell (1979), B.D., Ph.D., D.D., *Professor of Theology*
Jerry D. Campbell (1985), M.Div., M.S. in L.S., Ph.D., *Professor of the Practice of Theological Bibliography*
Ted A. Campbell (1985), Ph.D., *Assistant Professor of Church History*
James L. Crenshaw (1987), B.D., Ph.D., *Professor of Old Testament*
James Michael Efrid (1962), B.D., Ph.D., *Professor of Biblical Interpretation*
Donn Michael Farris (1950), M.Div., M.S. in L.S., *Professor of Theological Bibliography*
Mary McClintock Fulkerson (1983), M.Div., Ph.D., *Assistant Professor of Theology*
Paula E. Gilbert (1985), M.Div., Ph.D., *Instructor in American Christianity*
Stanley Hauerwas (1984), B.D., M.A., M.Phil., Ph.D., *Professor of Theological Ethics*
Frederick Herzog (1960), Th.D., *Professor of Systematic Theology*
Susan A. Keefe (1988), M.A., Ph.D., *Assistant Professor of Church History*
Thomas A. Langford (1956), B.D., Ph.D., D.D., *William Kellon Quick Professor of Theology and Methodist Studies*
Richard Lischer (1979), M.A., B.D., Ph.D., *Associate Professor of Homiletics*
George Marsden (1986), B.D., Ph.D., *Professor of the History of Christianity in America*
Paul A. Mickey (1970), B.D., Ph.D., *Associate Professor of Pastoral Theology*
Carol M. Noren (1986), M.Div., Ph.D., *Assistant Professor of Homiletics*
Russell E. Richey (1986), B.D., Ph.D., *Research Professor of Church History*
Grant S. Shockley (1983), M.Div., Ed.D., *Professor of Christian Education*
Dwight Moody Smith, Jr. (1965), B.D., Ph.D., *George Washington Ivey Professor of New Testament*
Harmon L. Smith (1962), B.D., Ph.D., *Professor of Moral Theology*
David Curtis Steinmetz (1971), B.D., Th.D., *Amos Ragan Kearns Professor of the History of Christianity*
*William C. Turner, Jr. (1982), M.Div., Ph.D., *Assistant Professor of Theology and Black Church Studies*
†Dan O. Via (1984), B.D., Ph.D., Litt. D., *Professor of New Testament*
Geoffrey Wainwright (1983), B.D., Th.D., *Professor of Systematic Theology*
†John H. Westerhoff III (1974), S.T.B., Ed.D., *Professor of Religion and Education*
William H. Willimon (1984), M.Div., S.T.D., *Professor of the Practice of Christian Ministry*
Robert L. Wilson (1970), B.D., M.A., Ph.D., *Professor of Church and Society*

FACULTY, DEPARTMENT OF RELIGION

(Teachers in graduate program in religion whose courses are open to Divinity School students.)

Kalman Bland (1973), Ph.D., *Associate Professor of Judaic Studies*
Elizabeth Clark (1982), Ph.D., *Professor of History of Christianity*
Roger Corless (1970), Ph.D., *Associate Professor of History of Religions*
Wesley A. Kort (1965), Ph.D., *Professor of Religion and Literature*
Bruce B. Lawrence (1971), Ph.D., *Professor of History of Religions*
C. Eric Lincoln (1976), Ph.D., *Professor of Sociology of Religion*
Carol L. Meyers (1979), Ph.D., *Assistant Professor of Old Testament*
Eric M. Meyers (1969), Ph.D., *Professor of Judaic Studies*
Robert T. Osborn (1954), Ph.D., *Professor of Theology*
Harry B. Partin (1964), Ph.D., *Associate Professor of History of Religions*
Melvin K. H. Peters (1983), Ph.D., *Associate Professor of Old Testament*
Sandra P. Robinson (1983), Ph.D., *Assistant Professor of History of Religions*
Kenneth J. Surin (1987), Ph.D., *Assistant Professor of History of Religions*
Orval Wintermute (1958), Ph.D., *Professor of Old Testament*

RELATED FACULTY

David A. Arcus (1985), M.Mus., M.M.A., *Instructor in Church Music and Director of Music*
Albert F. Fisher (1974), M.Div., *Adjunct Professor of Parish Work*

*Sabbatical leave, fall 1988.

†Sabbatical leave, spring 1989.

David M. Franzen (1977), B.D., Th.M., *Chaplain Supervisor of Duke Medical Center and Associate in Instruction, the Divinity School*
 W. Kenneth Goodson (1978), B.D., D.D., *Bishop-in-Residence*
 Keith G. Meador (1987), B.A., M.D., Th.M., *Visiting Professor of Psychiatry and Pastoral Care*
 James L. Travis, III (1987), M.Div., Ph.D., *Chaplain Supervisor of Duke Medical Center and Clinical Professor of Pastoral Care*

EMERITI

Frank Baker (1960), B.D., Ph.D., *Professor Emeritus of English Church History*
 Waldo Beach (1946), B.D., Ph.D., *Professor Emeritus of Christian Ethics*
 Robert Earl Cushman (1945), B.D., Ph.D., D.H.L., *Research Professor Emeritus of Systematic Theology*
 William David Davies (1966), M.A., F.B.A., D.Litt., *George Washington Ivey Professor Emeritus of Advanced Studies and Research in Christian Origins*
 Stuart C. Henry (1959), B.D., Ph.D., *Professor Emeritus of American Christianity*
 Osmond Kelly Ingram (1959), B.D., *Professor Emeritus of Parish Ministry*
 William Arthur Kale (1952), B.D., D.D., *Professor Emeritus of Christian Education*
 Creighton Lacy (1953), B.D., Ph.D., *Professor Emeritus of World Christianity*
 Roland E. Murphy (1971), M.A., S.T.D., S.S.L., *George Washington Ivey Professor Emeritus of Biblical Studies*
 M. Wilson Nesbitt (1958), B.D., D.D., *Adjunct Professor Emeritus of the Work of the Rural Church*
 Ray C. Petry (1937), Ph.D., LL.D., *James B. Duke Professor Emeritus of Church History*
 McMurry S. Richey (1954), B.D., Ph.D., *Professor Emeritus of Theology and Christian Nurture*
 Charles K. Robinson (1961), B.D., Ph.D., *Associate Professor Emeritus of Philosophical Theology*
 John Jesse Rudin II (1945), B.D., Ph.D., *Associate Professor Emeritus of Liturgy and Worship*
 William Franklin Stinespring (1936), Ph.D., *Professor Emeritus of Old Testament and Semitics*
 Franklin Woodrow Young (1968), B.D., Ph.D., *Amos Ragan Kearns Professor Emeritus of New Testament and Patristic Studies*

BOARD OF VISITORS

A. Morris Williams, Jr., *Chairman* (1989), Villanova, Pennsylvania
 The Reverend Dr. Joseph B. Bethea (1988), Raleigh, North Carolina
 Dr. J. Seaborn Blair, Jr. (*emeritus*), Wallace, North Carolina
 The Reverend Mr. Wesley F. Brown (*ex officio*), Durham, North Carolina
 Dean Dennis M. Campbell (*ex officio*), Durham, North Carolina
 Thelma Barclift Crowder (1990), South Boston, Virginia
 Chaplain Henry C. Duncan (1989), Pinehurst, North Carolina
 Randolph R. Few (*emeritus*), Durham, North Carolina
 The Reverend Mr. Albert F. Fisher (*ex officio*), Durham, North Carolina
 Bishop Ernest A. Fitzgerald (1988), Atlanta, Georgia
 The Reverend Dr. F. Owen Fitzgerald (1988), Burlington, North Carolina
 Bishop W. Kenneth Goodson (*ex officio*), Durham, North Carolina
 Margaret B. Harvey (1989), Kinston, North Carolina
 The Reverend Mr. Lawrence F. Hays, Jr. (*ex officio*), Lake City, South Carolina
 John P. Jaquette, Jr. (1990), Scotia, New York
 Dr. J. Ralph Jolly (1988), Birmingham, Alabama
 Bishop L. Bevel Jones, III (1990), Charlotte, North Carolina
 Sarah C. Jordan (1989), Raleigh, North Carolina
 The Reverend Dr. Wallace H. Kirby (1990), Durham, North Carolina
 Dr. Robin W. Lovin (1990), Chicago, Illinois
 Arch G. Mainous, Jr. (1990), Louisville, Kentucky
 Mary Alice Massey (1988), Jacksonville, Florida
 Bishop C. P. Minnick, Jr. (1988), Raleigh, North Carolina
 The Reverend Dr. William K. Quick (1989), Detroit, Michigan
 C. Leonard Richardson (*emeritus*), Asheboro, North Carolina
 The Reverend Dr. George P. Robinson (1990), Winston-Salem, North Carolina
 E. Norwood Robinson (1988), Winston-Salem, North Carolina
 Beverly M. Small (1989), Elizabeth City, North Carolina
 The Reverend Dr. Thomas B. Stockton (1988), High Point, North Carolina
 James T. Tanner, (1989), Rutherfordton, North Carolina
 The Reverend Dr. Wilson O. Weldon (*ex officio*), Durham, North Carolina
 M. Sherrill Williams (1988), Newton Grove, North Carolina
 Gordon Wilson Yarborough (1988), High Point, North Carolina



Duke University

DURHAM
NORTH CAROLINA
27706

The Divinity School Office of the Dean


The Divinity School was the first of Duke University's graduate professional schools to open its doors after the University was founded. This priority is indicative of the central role the School plays in the total University. We take our University setting seriously and believe that the advantages of theological education in the middle of Duke University are considerable.

The quality of our student body has never been better. We enroll 374 students in the professional degree programs (M.Div., M.T.S., M.R.E., and Th.M) and an additional 92 students in the M.A./Ph.D. program. Our students are men and women from almost 200 undergraduate schools, 29 denominations, 30 states and 6 foreign countries. Women constitute approximately 35 percent of the total enrollment, and black students almost 10 percent. Most of our students receive substantial financial support in the form of scholarships and grants-in-aid, this year a total of \$1.1 million. Duke's program of financial aid is rightfully renowned.

While the accomplishments of its distinguished faculty and aggressive international programs earn it increasing prominence in theological education and the ecumenical world, The Divinity School enjoys exceptionally strong regional, denominational and alumni support as well.

Duke's unique field education program emphasizes both remunerative employment and vocational preparation. The program's funding from The Duke Endowment makes it possible for our students to advance their competency in ministry while receiving substantial financial assistance.

We are a school of the church and of the university; we are a school in the Wesleyan tradition and in the ecumenical tradition; we are a school committed to professional education for the practice of lay and ordained ministries and to graduate theological education, research and scholarship. These are exciting times at The Divinity School as we seek bold and imaginative initiatives equal to the challenges of the late twentieth century.



Dennis M. Campbell
Dean

General Information



History

Duke University as it exists today developed from simple beginnings. Established in 1838, Union Institute became a normal college by 1851 and in 1859 was renamed Trinity College. In 1892 the college moved to Durham, North Carolina.

In 1924 James B. Duke established a trust fund for educational and charitable purposes. The chief beneficiary was Trinity College, which became Duke University. The purpose for establishing the trust was very clear: "I have selected Duke University as one of the principal objects of this trust because I recognize that education, when conducted along sane and practical, as opposed to dogmatic and theoretical lines, is, next to religion, the greatest civilizing influence. . . . And I advise that the courses at this institution be arranged, first, with special reference to the training of preachers, teachers, lawyers, and physicians, because these are most in the public eye, and by precept and example can do most to uplift mankind." The School of Religion began its work in the academic year 1926-27, and formal exercises for its opening were held on 9 November 1926. In 1940 the name was changed to the Divinity School.

During its history the Divinity School has had outstanding teachers, scholars, and administrative leaders,* and its graduates have distinguished themselves by making significant contributions to the church and the world. In 1964 a program of expansion was begun, culminating in February 1972, when the Divinity School doubled its physical facilities and moved into a handsome new building.

The Role of the Divinity School

The Divinity School represents theological inquiry and learning within the greater University. By history and indenture, it stands within the Christian tradition, mindful of its distinctive lineage in and its continuing obligation to the United Methodist Church. The Divinity School, although United Methodist in tradition and dependency, receives students from many Christian denominations and offers its educational resources to representatives of the several communions who seek an education for church-related ministry. From its inception, it has been ecumenical in aspiration, teaching, and prac-

*Since the institution of the school in 1926, the following persons have served as Deans or Acting Deans: Edmund Davidson Soper, 1926-28; Elbert Russell, 1928-41; Paul Neff Garber, 1941-44; Harvie Branscomb, 1944-46; Gilbert T. Rowe, Acting Dean of the Faculty, 1946-47; Paul E. Root (elected in 1947 but died before assuming office); Harold A. Bosley; 1947-50; James Cannon III, Acting Dean 1950-51, Dean 1951-58; Robert Earl Cushman, 1958-71; Thomas A. Langford, 1971-81; Jameson Jones, 1981-82; Dennis M. Campbell, 1982—.

tice, as well as in its faculty. Educational policy has consistently aspired to foster a Christian understanding "truly catholic, truly evangelical, and truly reformed."

The principal purpose of the Divinity School is the professional education for the ministry, which in today's world is manifested in a variety of forms. Although the conventional and inherited styles of ministry are now undergoing change, the Divinity School curriculum continues to prepare students for informed and discriminating discharge of the historic offices of church and congregation through the ministry of word and sacrament, pastoral care, and teaching. The Divinity School believes these offices will remain, although the form and context of the local church may change.

With this in mind, the Divinity School tries to prepare students for the mature performance of their vocation. It hopes to develop in each graduate a disciplined intelligence, informed by sound learning and equipped for worthy professional service. Its resources are offered to students with a diversity of ministerial aims, although the school seeks, by recruitment and financial support, to prepare persons for ordination or lay professional vocations in the churches. In all its endeavors, the Divinity School aims to serve the Church, the world, and primarily Jesus Christ the Lord of the Church.

The Relation of the Divinity School to Duke University

The Divinity School is an integral part of the University and shares fully in its activities, privileges, and responsibilities. The Sunday services in the University Chapel give Divinity School students each year an opportunity to hear several of the country's leading preachers. The University libraries make a rich collection of books and other materials easily accessible. Without paying additional fees, selected courses in the graduate and professional schools are open to Divinity School students, as well as the general, cultural, and recreational resources of the University.

Library Resources

Divinity School Library. The Divinity School Library contains a collection of more than 250,000 volumes in the field of religion and related disciplines and affords an unusual wealth of material for the seminary student. Although an integral part of the University's twelve-unit library system, which possesses more than 3,625,000 volumes, the Divinity School Library has its own separate facilities in the Divinity School Building. Its book collection is operated on the open stack system, and its reading rooms provide study facilities for students, space for the special reference collection in religion, and for the more than 600 religious periodicals to which the library currently subscribes.

Staffed by a librarian and a reference librarian trained in both theology and library administration, by a supporting staff of three persons, and by a number of student assistants, the Divinity School Library offers a variety of reference services to assist the student in selecting and locating materials. The staff, in cooperation with the faculty, maintains a book and periodical collection to support basic course work as well as advanced research in all major fields of religious studies.

The Divinity School Library is adjacent to the Perkins Library. The seminary student may use the resources and facilities of the Perkins Library, some of which include manuscripts, archives, public documents, newspapers, periodicals, microfilms, maps, rare materials (among which are eighty-one prized ancient Greek manuscripts), and reference assistance. There is a provision for borrowing books from the libraries of the University of North Carolina and other neighboring institutions.

The Henry Harrison Jordan Loan Library

Henry Harrison Jordan, (1862-1931), distinguished member of the Western North Carolina Conference, was memorialized by his children by the establishment of an en-

dowment in 1947. The Divinity School Librarian is the custodian of books purchased under this fund for loan, through postal services, to qualified ministers of all denominations or localities. The Jordan Loan Library maintains a catalogue of up-to-date publications representative of the several theological disciplines and areas of the minister's professional interest. Books may be borrowed by application to the Librarian of the Divinity School.

Library Funds

The following funds provide resources to enrich the collections of the Divinity School Library.

The Ormond Memorial Fund was established in 1924 by Dr. J. M. Ormond, Trinity College Class of 1902, and Mrs. Ormond, in memory of his parents, Mr. and Mrs. J. J. Ormond. The fund income maintains the collection of books on the rural church.

The Avera Bible Fund was established in 1895 by a gift of Mrs. L. B. McCullers in memory of her husband, Willis H. Avera. The income is for the purchase of books for the Divinity School Library and for the support of the Avera Bible Lectures.

The Louis W. Bailey Memorial Fund was established in 1958 by the Reverend Dr. A. Purnell Bailey, Class of 1948, in memory of his father. The income is to be used for books for the Divinity School Library.

The Stuart C. Henry Collection Endowment Fund was established by the Class of 1975 to honor Professor Henry. Income from the fund is used to enhance the collection on American Christianity. Substantial additional contributions to this fund have been made by Miss Marion D. Mullins of Fort Worth, Texas.

The William Arthur Kale, Jr. Memorial Fund was established in 1964 by Professor and Mrs. William Arthur Kale, Sr., for the purchase of books and other materials in the area of fine arts and religious musicology for the perpetual enrichment of the holdings of the Divinity School Library. William Arthur Kale, Jr., was a member of the Duke University Chapel Choir.

The Walter McGowan and Minnie Daniel Upchurch Fund was established in 1971 by W. M. Upchurch, Jr., an alumnus of Duke University and a member of its Board of Trustees, honoring his parents. The fund income is used for the purchase of materials in the area of sacred music and is supplementary to a collection of materials given by Mr. Upchurch to the Divinity School Library. This collection includes anthems and other compositions of sacred music, along with 62 disc recordings of the Duke University Summer Chapel Choir for the years 1932-41 when Mr. Upchurch was director of the choir.

Center for Studies in the Wesleyan Tradition

The Center for Studies in the Wesleyan Tradition was founded in 1979 and is supported by a permanent endowment of the Divinity School designated for its use. The center supports a wide variety of programs designed to advance teaching, research, and publication in Wesleyan history and theology.

Library. The Baker Collection is the largest and finest collection of Wesley and Methodist materials extant. Named for Professor Emeritus Frank Baker, the world's foremost authority on John Wesley, and Editor of the Bicentennial Edition of Wesley's Works, a project based at Duke Divinity School, the Baker Collection is an unparalleled resource.

Visiting Professors. The center brings distinguished visiting professors to teach in the Divinity School. Recently, Dr. David Stacey, Principal of Wesley College, Bristol,



Divinity School Faculty at Baccalaureate

England, and Dr. José Miguez Bonino, Professor of Theology and Ethics at the Protestant Theological Seminary in Buenos Aires, Argentina served in this capacity.

Visiting Scholars. The center makes research grants to scholars from around the world to work for various periods of time in the Divinity School. Among those who have served recently are Bishop Ole Borgen, United Methodist Bishop of Sweden, Norway, Denmark, Finland, and Estonia, and Professor Morna Hooker, Lady Margaret Professor of Divinity, Cambridge University, England.

Visiting Lecturers. The center has an extensive program of visiting lecturers which exposes students and faculty of the Divinity School to leading figures in the Wesleyan tradition from throughout the world. Most recently these included: Professor Peder Borgen, University of Trondheim, Norway; Dr. Manfred Marquardt, the Methodist Theological Seminary, Reutlingen, West Germany; Dr. Rutiger Minor, the Methodist Seminary in East Germany; the Reverend Helmut Nausner, District Superintendent, Vienna, Austria; Professor Norman Young, Principal of Queens College, the University of Melbourne, Australia; and Dean Walter Klaiber, Methodist Theological Seminary, Rentingen, West Germany.

Publications. The center is committed to a program of scholarly publication. In 1983, support was given for preparation of a reader in theology in the Wesleyan tradition to be published in 1984.

Faculty Committee. Divinity School faculty related to the center include Professor Thomas A. Langford, Professor Geoffrey Wainwright, Professor Robert L. Wilson, Bishop W. Kenneth Goodson, and Professor Dennis M. Campbell, Dean and Chairman.



Faculty



James L. Crenshaw and D. Moody Smith

Faculty

The faculty of Duke University Divinity School is regarded as one of the world's strongest theological faculties. The faculty is committed to excellence in teaching, research, publication, and service to the church, the university, and the wider community. The Duke faculty is particularly well-known for its strong commitment to the church and its ministry. The faculty is very diverse. It includes persons who come from all over the United States and the world. Virtually all major Christian traditions are represented, and identity with specific communities within the Christian tradition is taken seriously by faculty members. Because of its distinguished faculty, the Divinity School is an international center for research and publication in the theological disciplines and for reflection on the practice of ministry in the late twentieth century.

Faculty Biographical Information

Lloyd Richard Bailey, *Associate Professor of Old Testament*. B.A., B.D. (Duke University); Ph.D. (Hebrew Union College-Jewish Institute of Religion).

Professor Bailey's academic interests include biblical studies (primarily Pentateuch and Prophetic Literature), the problem of utilizing ancient texts as scripture ("text to sermon"), Ancient Near Eastern civilization and archaeology, and perspectives on aging, dying, and death. In these areas he has written and edited nearly two dozen books, more than thirty articles in journals and encyclopedias, and has prepared curriculum and media units for the United Methodist Church. He currently serves on the editorial boards of *Biblical Archaeologist* and *Quarterly Review*, is a past President of the Society of Biblical Literature (Southeastern Region), and is an Elder in the Western North Carolina Annual Conference of the United Methodist Church. Prior to joining the Duke faculty, he taught at Union Theological Seminary in New York.

Teresa M. Berger, *Assistant Professor of Ecumenical Theology*. M.Th. (Mainz University, West Germany); L.Th. (St. John's College, Nottingham, England); Ph.D. (University of Heidelberg).

Professor Berger's academic interests are in ecumenical and liturgical theology. Her published research includes studies on the liturgical thinking of nineteenth-century Tractarianism, as well as on an ecumenical theology of worship, and on women and worship. She held a visiting position at the Roman Catholic faculty of the University of Mainz (West Germany), where she taught liturgical theology. She currently is a Council member of *Societas Liturgica*, and is on the editorial board of *Studia Liturgica*, of which she is the review editor. Dr. Berger is a Roman Catholic who (as part of a lived ecumenical theology) currently lives and worships within the Eastern Orthodox tradition.

Dennis M. Campbell, *Dean of The Divinity School and Professor of Theology*. A.B. (Duke University); B.D. (Yale University); Ph.D. (Duke University); D.D. (Florida Southern).

Dean Campbell teaches in systematic theology. His particular research interests are in ecclesiology, including theology of ministry, and ethics. Professor Campbell's books include *Authority and the Renewal of American Theology*; *Doctors, Lawyers, Ministers: Christian Ethics in Professional Practice*; and *The Yoke of Obedience: The Meaning of Ordination in Methodism*. He has written numerous articles for journals and is widely in demand as a lecturer and preacher. Prior to his appointment at Duke he served as a pastor and as a professor at the undergraduate level. Dr. Campbell is an Elder in the United Methodist Church. He has twice been a delegate to General Conference and is a member of the World Methodist Council. He serves on the Accrediting Commission of the Association of Theological Schools in the U.S. and Canada. Through his participation in several major academic boards, Dean Campbell is a national leader in U.S. higher education.

Jerry D. Campbell, *Professor of the Practice of Theological Bibliography*. B.A. (McMurry College); M.Div., (Duke University); M.S. (University of North Carolina); Ph.D. (University of Denver).

Dr. Campbell's principal efforts are directed toward insuring that the Divinity School provides the resources necessary to support the research and study of faculty and students. He is concerned both with bringing resources to the Divinity School Library and with making them available for use as quickly as possible. His interests range from scholarly publishing to the computer automation of library practices. He also serves the wider University as Vice-Provost for Library Affairs and University Librarian. Dr. Campbell, an ordained United Methodist clergyman, is a member of the University United Methodist Church Charge Conference in Chapel Hill. In University United Methodist Church, he chairs the Church and Society Work Area, occasionally teaches Sunday School, and assists the staff in other ways as needed.

Ted A. Campbell, *Assistant Professor of Church History*. B.A. (North Texas State University); B.A./M.A. (Oxford University); Ph.D. (Southern Methodist University).

Professor Campbell teaches principally in the area of post-Reformation European and British Church history, with a focus on Wesley studies. He is the author of *The Apostolate of United Methodism*, and has published articles in *Church History*, *The Wesleyan Theological Journal*, *Circuit Rider*, and the *AME Zion Quarterly Review*. Prior to his joining the Divinity School faculty in 1985, Professor Campbell served church appointments in Texas and taught for a year as Visiting Lecturer at the Methodist Theological School in Ohio.

James L. Crenshaw, *Professor of Old Testament*. B.A. (Furman University); B.D. (Southern Baptist Theological Seminary); Ph.D. (Vanderbilt University).

Professor Crenshaw's academic interests are in literary and theological interpretations of the Hebrew Bible. He teaches courses on biblical theology, wisdom and prophetic literature, prayer in the Old Testament, narrative art in the Hebrew Bible, the problem of evil, Job, Ecclesiastes, Proverbs, and introduction to the literature and history of ancient Israel. Among his publications are *Prophetic Conflict*, *Samson*, *Old Testament Wisdom*, *A Whirlpool of Torment*, *Ecclesiastes*, and *Story and Faith*. A former editor of the Society of Biblical Literature Monograph Series, he currently edits a series on Personalities of the Old Testament. A Baptist minister, he has been active in Baptist and Christian (Disciples of Christ) churches for over three decades. Before joining the Duke faculty, Professor Crenshaw taught at Atlantic Christian College, Mercer University, and Vanderbilt Divinity School.

James Michael Efird, *Professor of Biblical Interpretation*. A.B. (Davidson College); M.Div. (Louisville Presbyterian Theological Seminary); Ph.D. (Duke University).

Having served on the Duke Divinity School faculty since 1962, Professor Efird has concentrated on making biblical scholarship understandable and useful for men and women preparing primarily for parish ministry. In addition, he has taken this approach to the laity of the church in many different denominations. Professor Efird's teaching, research, and writing cover the broad spectrum of both the Old and the New Testaments and are reflected in eleven books and in over fifty articles in various journals and Bible dictionaries. Currently he is serving as editor of the Contemporary Christian Concerns series ("What the Bible Says") from Abingdon Press.

Donn Michael Farris, *Professor of Theological Bibliography*. B.A. (Berea College); M.Div. (Garrett-Evangelical Theological Seminary); M.S. in Library Science (Columbia University).

The senior member of both the Divinity School faculty and the University library staff, Professor Farris came to Duke in 1950 and has directed the growth of the Divinity School Library from 48,000 volumes at that time to its present size of more than a quarter of a million. He is a past president of the American Theological Library Association and is a member of its Board of Directors. He founded the association's official quarterly publication, the *ATLA Newsletter*, in 1953, and has edited it continuously for the past thirty-five years.

Albert F. Fisher, *Adjunct Professor of Parish Work*. A.B. (Duke University); B.D. (Duke University); D.D. (North Carolina Wesleyan College).

Albert Fisher has been with the Rural Church Division of The Duke Endowment since 1974, serving as Director since 1977. As Director of the Rural Church Division, he is responsible for making requests to the Trustees of

The Duke Endowment from eligible beneficiaries. Many of the grants made through the Rural Church Division are made to Duke Divinity School or to students in The Divinity School who serve as student pastors or assistant pastors in rural United Methodist churches in North Carolina. Prior to joining The Duke Endowment, Fisher was a pastor and a district superintendent in the North Carolina Conference. He is a member of the Board of Visitors of Duke Divinity School, a past president of the Divinity School Alumni Association, and a past president of the Duke University General Alumni Association.

Mary McClintock Fulkerson, *Assistant Professor of Theology*. B.M. (University of North Carolina at Chapel Hill); M.Div. (Duke University); Ph.D. (Vanderbilt University).

Professor McClintock Fulkerson's primary teaching interests are nineteenth-century German Protestant thinkers and contemporary Protestant theology, focusing on authority in theology, ecclesiology, and feminist theologies. Her current research is in the role of tradition and Scripture in feminist theologies. Ordained in the Presbyterian Church, U.S.A., she was a pastor before coming to Duke. She is a member of Presbytery's Examination Committee and of the Committee on Ministry Design of the national Presbyterian Church, U.S.A.

Paula E. Gilbert, *Instructor in American Christianity, and Assistant Dean of Admissions and Student Life*. B.A. (Huntingdon College); M.Div., Ph.D. (Duke University).

Professor Gilbert's academic interests are in American religious thought and British and American Methodism. Having written about Georgia Harkness for her dissertation, she is also concerned about women and the church, religion and war, and ecumenism. Joint author of *Pastoral Assertiveness: A New Model for Pastoral Care*, Professor Gilbert is also Minister to York Chapel and Director of the Ministerial Course of Study School at Duke. She is a member of the Board of Advisors for the Intentional Growth Center of the Southeastern Jurisdiction of the United Methodist Church and Coordinator for the 1988 revision of the correspondence Course of Study School curriculum for the United Methodist Church. Dr. Gilbert is an Elder in the Alabama-West Florida Annual Conference.

Stanley M. Hauerwas, *Professor of Theological Ethics*. B.A. (Southwestern University); B.D., M.A., M.Phil., Ph.D. (Yale University).

Professor Hauerwas works in the field of theological ethics where he has sought to recover the significance of the virtues for understanding the nature of the Christian life. This has led him to emphasize the importance of the church as well as narrative for understanding the nature of Christian existence. His work has been characterized by cutting across disciplinary lines as he is in conversation with systematic theology, philosophical theology, philosophical ethics and political theory, as well as the philosophy of social science. He has published several books, but perhaps the best known are *The Peaceable Kingdom* and *A Community of Character*. He lectures widely to church and academic audiences but his work clearly indicates his fundamental interest is in the up-building of moral discourse within the contemporary Christian community. Professor Hauerwas is a lay member of Resurrection United Methodist Church in Durham.

Frederick Herzog, *Professor of Systematic Theology*. Th.D. (Bonn University, Basel University); Th.M., Th.D. (Princeton Theological Seminary); D. Theol. (Bonn University).

Prior to joining The Divinity School faculty in 1960, Professor Herzog was pastor in his native North Dakota and on the faculty of what is now United Theological Seminary of the Twin Cities. His research centers in nineteenth-century Protestant thought, the polarization of systematics and dogmatics, philosophical method in religious studies and the development of a new paradigm of theology. Since the Civil Rights era he has shaped liberation theology as hermeneutical focus in the North American context. His publications include *Understanding God, Liberation Theology, Justice Church*, and *God-Walk: Liberation Shaping Dogmatics*. As member of Commissions of the United Church of Christ (and World Council of Churches) he has worked on concrete ecumenical union, doctrinal renewal, and globalization of theological education. He is also a member of the Oxford Institute of Methodist Theological Studies. Professor Herzog is an ordained minister of the United Church of Christ.

Susan A. Keefe, *Assistant Professor of Church History*. Ph.D. (University of Toronto).

Dr. Susan A. Keefe joins the faculty as Assistant Professor of Church History after a year as an Andrew W. Mellon Faculty Member in the Humanities at Harvard. Prior to that she taught at Davidson. She received her doctorate in Medieval Studies from the Centre for Medieval Studies, University of Toronto, in 1981. Her dissertation and publications examine the teaching and celebration of the sacraments of Christian initiation across Carolingian Europe using baptismal instructions written for parish priests.

Thomas A. Langford, *William Kellon Quick Professor of Theology and Methodist Studies*. B.A. (Davidson College); B.D., Ph.D. (Duke University); D.D. (Davidson College).

Professor Langford's academic interests are in systematic and philosophical theology, in British theology and in theology in the Wesleyan tradition. He attempts especially to explore the relation of theology to culture. *Philosophy of Religion, Intellect and Hope, Practical Divinity, Christian Wholeness, Prayer and the Common Life, and Theology in the Wesleyan Tradition: A Sourcebook* are among his publications. Activity in the University as Vice-Provost and in the United Methodist Church also express his interests. He helped write the section on ministry in *The Book of Discipline* of the United Methodist Church and is the principal author of the current statement

on the mission of the Church. An Elder in the Western North Carolina Conference, he has served as a delegate to Jurisdictional and General Conferences since 1972. Dr. Langford was Dean of the Divinity School 1971-1981.

Richard Alan Lischer, *Associate Professor of Homiletics*. B.A. (Concordia Senior College); M.A. (Washington University); B.D. (Concordia Seminary); Ph.D. (University of London).

A native of St. Louis, Professor Lischer's graduate theological training is in systematic theology. He is an ordained minister in the Evangelical Lutheran Church in America and has nine years of pastoral experience in rural and suburban settings. He joined the faculty of the Divinity School in 1979 where he teaches in the areas of homiletics and ministry. In his scholarly work Dr. Lischer has sought to portray proclamation as an integrated theological activity. He has published widely in the areas of theology, ministry, and preaching. His books, *A Theology of Preaching* and *Theories of Preaching* deal with the theological and rhetorical bases of preaching. *Speaking of Jesus* reflects his parish experiences with grassroots evangelism.

George Marsden, *Professor of the History of Christianity in America*. A.B. (Haverford College); B.D. (Westminster Theological Seminary); M.A., Ph.D. (Yale University).

Professor Marsden has written and edited books on the history of American evangelicalism and fundamentalism. Currently his research focuses on the secularization of American universities. He is an editor of the *Reformed Journal*. His books include *Fundamentalism and American Culture*, *The Evangelical Mind and New School Presbyterian Experience*, *The Search for a Christian America*, and *Reforming Fundamentalism: Fuller Seminary and the New Evangelicalism*. Before coming to Duke in 1986 he taught for twenty-one years at Calvin College.

Paul A. Mickey, *Associate Professor of Pastoral Theology*. B.A. (Harvard University); B.D., Ph.D. (Princeton Theological Seminary).

Prior to joining the Duke faculty, Professor Mickey served pastorates in Ohio and New Jersey, was a chaplain services specialist in the Air Force, and was a behavioral and management consultant for Western Electric Psychological Testing Division. An ordained United Methodist minister, his primary interests are in the areas of marriage and family counseling, developing parish leadership skills, and the intersection of theology and psychology. He has published in the areas of marriage counseling and parish leadership skills. Current areas of interest are in self esteem issues for adults and children, with specific focus on adult children of alcoholics, and the developmental, spiritual, and theological blockages resulting from abusive and obsessive behavior.

Carol Marie Noren, *Assistant Professor of Homiletics*. B.A. (Augustana College); M.Div. (Garrett-Evangelical Theological Seminary); Ph.D. (Princeton Theological Seminary).

A native of Illinois, Professor Noren is an Elder in the United Methodist Church. She served churches in Manchester, England and in the Northern Illinois Conference before entering Princeton. She was on the faculty of Princeton Theological Seminary prior to coming to the Divinity School. Her academic interests are in the history and theology of preaching, worship in the Wesleyan tradition, and women in preaching. Her current research is on the history of preaching in Swedish-American Methodism. She has preached widely in the United States and England.

Russell E. Richey, *Associate Dean for Academic Programs and Research Professor of Church History*. B.A. (Wesleyan University); B.D. (Union Theological Seminary); M.A., Ph.D. (Princeton University).

Before coming to Duke, Professor Richey was on the faculty of Drew University where he taught American church history and served terms as dean of students in the Theological School and assistant to the president. Editor of three books, most recently, *Rethinking Methodist History* (1985), and of many articles, he has research interests in institutional aspects of American religion and in Methodist history. He teaches in American Christianity and American Methodism. Professor Richey is an Elder in the North Carolina Conference of The United Methodist Church.

B. Maurice Ritchie, *Associate Dean for Student Life and Director of Field Education*. B.A. (Davidson College); B.D. and Graduate Study (Duke University).

The Reverend B. Maurice Ritchie specializes in the practice of ministry and the training of persons for ministry in parishes, institutions, chaplaincies, and a variety of other settings. His own experience includes service as a parish minister, as college chaplain, and a professor at the undergraduate level. He previously served the Divinity School as Director of Admissions and Student Affairs. He is an Elder in the Western North Carolina Conference and a member of the Board of Ordained Ministry of that Conference and of the Southeastern Jurisdiction.

Grant S. Shockley, *Professor of Christian Education*. A.B. (Lincoln University); M.Div. (Drew University); M.A., Ed.D. (Union Theological Seminary/Columbia University).

Professor Shockley's areas of teaching interest include curriculum development, instructional and learning theory, age-level and family life ministries. His previous teaching positions include Garrett Theological Seminary, Candler School of Theology, Emory University. Dr. Shockley's research interests include Black theological education and Methodist history. His many publications include books, chapters, research studies, numerous articles in professional journals and curriculum resource materials. He is a consultant to Protestant church education boards in the United States, Africa, Asia, and Latin America. He has served as a visiting professor at New York University, Northwestern University, Drew University, and the University of Zimbabwe.

Dwight Moody Smith, *George Washington Ivey Professor of New Testament*. B.A. (Davidson), B.D. (Duke University), M.A., Ph.D. (Yale University).

Professor Smith's *Composition and Order of the Fourth Gospel* appeared in 1965. Subsequently, his contributions to Johannine scholarship have taken the form of articles, essays and reviews, the most notable of which were published in *Johannine Christianity*. His textbook, with Robert A. Spivey, *Anatomy of the New Testament*, will soon appear in a fourth revised edition. *John*, in the Proclamation Commentaries Series, appeared in a revised edition in 1986. He has published *Interpreting the Gospels for Preaching*, as well as articles in the *Interpreter's Dictionary of the Bible*, *Harper's Bible Dictionary*, and *Macmillan's Encyclopedia of Religion*. A postdoctoral fellow of the Lilly Foundation (Zurich Foundation), the Guggenheim Foundation (Cambridge University), and the Association of Theological Schools, from 1960 to 1965, he previously taught at the Methodist Theological School in Ohio. He is an Elder in the South Carolina Annual Conference.

Harmon L. Smith, *Professor of Moral Theology and Professor of Community and Family Medicine*. B.A. (Millsaps College); B.D., Ph.D. (Duke University).

Professor Smith's teaching centers in systematic Christian ethics and medical ethics. His principal research interests are in ethical method, decision theory, and ethics and medicine. He has been a visiting professor in several universities both here and abroad, and has lectured in more than 150 colleges and universities, and more than 75 hospitals and medical schools, in the U.S., Canada, and Europe. His most recent book is *Professional Ethics and Primary Care Medicine* (with Larry Churchill). He is a priest of the Episcopal Church, canonically resident in the Diocese of North Carolina, and currently Interim Rector of St. Titus' Church, Durham.

David C. Steinmetz, *Amos Ragan Kearns Professor of the History of Christianity*. B.A. (Wheaton College); B.D. (Drew University); Th.D. (Harvard University).

Professor Steinmetz is a specialist in the history of Christianity in the later middle ages and Reformation. Before coming to Duke in 1971, he taught at Lancaster Theological Seminary of the United Church of Christ. In 1977 he was a Visiting Professor at Harvard University and a Guggenheim Fellow at Cambridge University. A former president of the American Society of Church History (1985), he has written numerous books and articles in his field, including *Luther and Staupitz* (1980), *Luther in Context* (1986) and *Memory and Mission: Theological Reflections on the Christian Past* (1988). He is a United Methodist minister and a member of the North Carolina Conference.

James L. Travis III, *Clinical Professor of Pastoral Care*. B.A. (Mississippi College); B.D., Th.M. (Southern Baptist Theological Seminary); Ph.D. (Emory University).

Professor Travis' clinical and academic interests have blended over twenty-five years of pastoral care and education in psychiatric and general hospitals. Earlier publications address issues such as New Testament implications for pastoral care and counseling, and liturgical worship in a psychiatric hospital. Certified as a Chaplain Supervisor by the Association for Clinical Pastoral Education, he is interested in the formation and development of persons in the pastoral role, and medical ethics and pastoral care. His research interests include the relationship of pastoral care to health care and the measurement of objectives in CPE programs. Dr. Travis is Chaplain to Duke University Hospital and Director of Chaplain Services at Duke University Medical Center.

William C. Turner, Jr., *Assistant Professor of Theology and Black Church Studies*. B.S., M.Div., Ph.D. (Duke University).

Professor Turner held positions within Duke University in student affairs and Afro-American Studies before joining the Divinity School faculty. His ongoing work focuses on pneumatology and the tradition of spirituality and preaching within the Black Church. Upcoming articles on "Black Evangelicalism," "The Musicality of Black Preaching," and "The Black Church and the Ecumenical Tradition" reflect his teaching and writing interests. Professor Turner travels widely as a preacher and lecturer. He retains active involvement in the church and community activities.

Dan O. Via, *Professor of New Testament*. B.S. (Davidson College); B.D. (Southern Baptist Theological Seminary); Ph.D. (Duke University), Litt. D. (Davidson College).

Professor Via's teaching and research interests focus on the parables of Jesus, the Gospels of Mark and Matthew, New Testament theology and ethics, and hermeneutics; and his primary method of interpretation has been to use existential thinking and literary criticism as a means for articulating the theological meaning of the New Testament. Among his publications are *The Parables* and *The Ethics of Mark's Gospel*. His current project is a study of the problem of self-deception as it appears in the writings of Paul and the Gospel of Matthew. He has held visiting professorships recently at the University of Zimbabwe and at Harvard Divinity School. He is an ordained Baptist minister and preaches in various churches and lectures to ministerial groups.

Geoffrey Wainwright, *Professor of Systematic Theology*. B.A., M.A., B.D., D.D. (University of Cambridge); Th.D. (University of Geneva).

A minister of the British Methodist Church, Dr. Wainwright taught theology in Cameroon, West Africa (1967-73), Birmingham, England (1973-79), and Union Theological Seminary, New York (1979-83). He is author of *Eucharist and Eschatology* and of *Doxology*, and editor of *The Study of Liturgy* and *The Study of Spirituality*, all

published by Oxford University Press. He is a member of the Faith and Order Commission of the World Council of Churches and currently chairs the international dialogue between the World Methodist Council and the Roman Catholic Church. His churchly interests are reflected in his book *The Ecumenical Moment* and another on *Wesley and Calvin as Sources of Theology, Liturgy and Spirituality*. He teaches across the entire range of Christian doctrine and is particularly interested in the truth claims of faith and theology.

John H. Westerhoff III, *Professor of Religion and Education*. B.S. (Ursinus College); S.T.B., (Harvard University); Ed.D. (Columbia University).

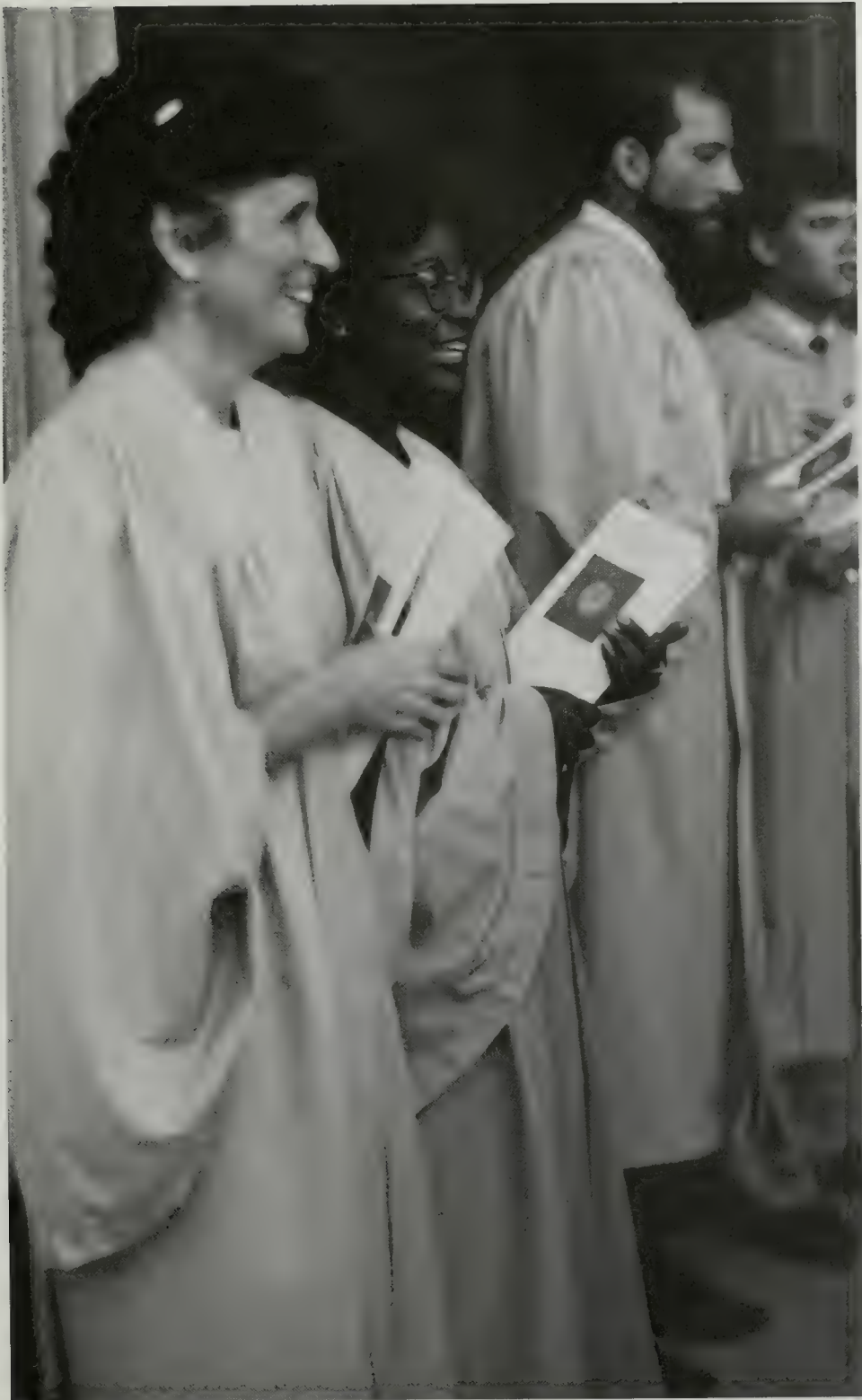
Professor Westerhoff is best known for his numerous books, of which *Will Our Children Have Faith?* has become a classic. Having taught at various universities including Harvard, Princeton, Fordham, and Boston College, he has been at Duke for fifteen years, where he has focused his scholarship and teaching on Christian formation, education, and instruction. For the past ten years he has been editor of the journal *Religious Education*. As a practical theologian he is concerned about the intersection of various aspects of ministry such as liturgics, pastoral care, and spirituality. An Episcopal priest, he assists at the Chapel of the Cross in Chapel Hill, North Carolina. A popular speaker and workshop leader, he travels throughout the world working with clergy and laity from most every tradition.

William H. Willimon, *Professor of the Practice of Christian Ministry*. B.A. (Wofford College); M.Div. (Yale University); S.T.D. (Emory University).

Professor Willimon teaches courses in preaching and worship in addition to his duties as Minister to the University. Before coming to Duke, he served as pastor in churches in Georgia and South Carolina. His research and publication includes work in liturgics, homiletics, and pastoral care. He is the author of twenty-six books, two of which have been selected by the Academy of Parish Clergy as 'the most useful book for pastors' in the year in which they were published. He has served the church as an editor of new worship resources, curriculum writer, and as a member of the United Methodist Commission on Worship. He is on the editorial board of three professional journals, including *Quarterly Review* and the *Christian Century*, and has lectured in the United States, Korea, and Europe. He is an Elder in the South Carolina Conference of the United Methodist Church.

Robert L. Wilson, *Professor of Church and Society*. A.B. (Asbury College); M.A. (Lehigh University); B.D. Garrett-Evangelical Theological Seminary; Ph.D. (Northwestern University).

Professor Wilson's research interests focus on the relationship between church and community, the sociology of religious institutions, congregational planning and United Methodist polity. His major publications are: *Faith and Form: A Unity of Theology and Polity in the United Methodist Tradition* (with Steve Harper), *Rekindling the Flame: Strategies for a Vital United Methodism* (with W. H. Willimon), *Shaping the Congregation, Preaching and Worship in the Small Church* (with Willimon), and *What's Ahead for Old First Church* (with E.E. Jones). He is the author of numerous articles and research reports. An Elder in the North Carolina Conference of the United Methodist Church, for twelve years prior to coming to Duke, he served as Director of Research for the National Division of the Board of Missions. He is the Director of the J. M. Ormond Center for Research Planning and Development at Duke University.



Admissions



Requirements and Procedures

The Divinity School is a fully accredited member of the Association of Theological Schools and is one of thirteen accredited seminaries of the United Methodist Church. It considers candidates for admission who hold an A.B. degree, or its equivalent, from a college approved by a regional accrediting body.

Preseminary Curriculum. The Divinity School follows the guidelines of the Association of Theological Schools with respect to undergraduate preparation for theological study. In general, this means a strong background in liberal arts, especially the humanities. A well-rounded background in English language and literature, history, philosophy, psychology, religion, social science, and foreign languages is especially desirable.

Application Procedures for Master of Divinity and Master of Religious Education Programs. Application forms secured from the admissions office should be filed six to twelve months in advance of the intended date of enrollment. Ordinarily, no application for a degree program will be accepted after 15 May and 1 November for August and January enrollments, respectively. The student should provide the following supporting documents and information: (1) one copy of the official transcript from each college, university, or seminary attended sent by the institution directly to the Assistant Dean for Admissions; (2) one supplementary transcript, sent as soon as possible, showing completion of work which was in progress when the earlier transcript was made; and (3) the names of five persons who are best qualified to judge the applicant as a prospective student in the Divinity School and who will be contacted by the school for written letters of recommendation. *Materials submitted in support of an application are not released for other purposes and cannot be returned to the applicant.*

Applicants are strongly urged to come for on-campus visits and interviews prior to final admission. *A minimum of thirty days is required to process any application for a degree program.*

Graduates of unaccredited senior colleges and universities may apply for admission, but will be considered for admission only on a limited program basis (see next page).

Admission Requirements. Those persons are encouraged to apply:

1. who have or will have been awarded a bachelor's degree from a regionally accredited college or university prior to their intended date of enrollment;
2. who have attained at least an overall B- (2.65 on 4.0 scale) academic average; and

3. who are committed to some form of ordained or lay ministry.

Applicants are evaluated on the basis of academic attainment, future promise for ministry, and vocational clarity and commitment.

Admission on Limited Program. Limited program is a special relation between the school and the student, designed to encourage and support academic achievement. Students may be admitted on limited program for a number of reasons including an undergraduate degree in a program other than liberal arts, an undergraduate degree from a nonaccredited college, or an undergraduate transcript that does not fully meet Divinity School standards.

Limited program means reduced schedules of work, with the amount determined by the Associate Dean for Academic Programs (ordinarily no more than three courses each of the first two semesters), and also includes a review of work at the end of each semester by the Committee on Academic Standing until limited program status is lifted.

Application Procedures for Master of Theological Studies Program. Application forms can be secured from the admissions office and should be filed six to twelve months in advance of the intended date of enrollment. Ordinarily, no application for the M.T.S. degree will be accepted after 15 May and 1 November for August and January enrollments, respectively. The student should provide the following supporting documents and information: (1) one copy of the official transcript from each college, university, or seminary attended sent by the institution directly to the Assistant Dean for Admissions; (2) one supplementary transcript, sent as soon as possible, showing completion of work which was in progress when the earlier transcript was made; (3) the names of three or four college (or seminary) professors who are best qualified to judge the applicant as a prospective student in the Divinity School and who will be contacted by the school for written letters of recommendation; and (4) the name of at least one person willing to serve as a general reference who will be contacted by the school for a written letter of recommendation. *Materials submitted in support of an application are not released for other purposes and cannot be returned to the applicant.*

Admission Requirements. Those persons are encouraged to apply for the M.T.S.:

1. who have been awarded a bachelor's degree from a regionally accredited college or university prior to their intended date of enrollment;
2. who have attained at least an overall B (3.0 on a 4.0 scale) academic average; and
3. who demonstrate program goals commensurate with this degree program.

Application Procedures for Master of Theology Program. Application forms can be secured from the admissions office and should be filed six to twelve months in advance of the intended date of enrollment. Ordinarily, no application for the Th.M. degree will be accepted after 15 May and 1 November for August and January enrollments, respectively. The student should provide the following supporting documents and information: (1) one copy of the official transcript from each college, university, or seminary attended sent directly to the Assistant Dean for Admissions by the institution; (2) one supplementary transcript, sent as soon as possible, from the seminary showing completion of work which was in progress when the earlier transcript was made; (3) the names of three seminary professors who are best qualified to judge the applicant as a prospective student in the Divinity School and who will be contacted by the school for written letters of recommendation; (4) the name of one denominational official qualified to appraise the applicant's ministerial work who will be contacted by the school for a written letter of recommendation; and (5) scores from either the Graduate Record Examination or the Miller Analogies Test sent directly to the school. *Materials submitted in support of an application are not released for other purposes and cannot be returned to the applicant.*



Admission Requirements. Those persons are encouraged to apply for the Th.M.:

1. who have been awarded a bachelor's degree from a regionally accredited college or university;
2. who have or will have been awarded the M.Div. degree (or the equivalent) from an accredited theological institution;
3. who have achieved superior academic records; and
4. who desire to continue or resume their theological education for enhancement of professional competence in selected areas of study.

Additional Procedures for International Students. Fully qualified students from outside the United States are welcome to apply for admission to the Divinity School. In applying for admission the international student must, in addition to the information required of all students, submit with the application material: (1) if the student's native language is not English, certification of English proficiency demonstrated by scores from the Test of English as a Foreign Language (TOEFL), administered through the Educational Testing Service in Princeton, New Jersey, (the Divinity School requires a score of 550 or higher on the TOEFL); (2) a statement of endorsement from an official of the student's national ecclesiastical body, affirming that ecclesiastical body's support for the student's pursuit of theological studies in the United States and welcoming the student into active ministry under its jurisdiction following the student's study in this country; and (3) a statement demonstrating financial arrangements for the proposed term at the Divinity School (estimated costs per calendar year are \$17,000*). *An international student must submit scores from the TOEFL, a financial statement, an endorsement by an official of an ecclesiastical body, and have all transcripts and five letters of recommendation sent to the Admissions Office of the Divinity School before the Divinity School will make any offer of admission.*

Admission as a Special Student. Special student status is a restricted category of admission for persons who do not have need of a degree program and who desire access to the rich offerings of the Divinity School curriculum for particular purposes. Special student status may be granted after a person has submitted an application and all transcripts of undergraduate academic work and when all three letters of recommendation have been received from listed references. Applications for special student status must be submitted at least forty-five days prior to the intended date of enrollment. *Special students are ineligible for any form of financial assistance through the Divinity School.*

Admission Acceptance. Applicants are expected to indicate their acceptance of admission within three weeks of notification and to confirm this with the payment of an admission fee of \$50. Upon matriculation, this fee is applied to the first semester tuition charge.

To complete admission students must provide a certificate of immunization and general health to the student health service. The admission office must also receive a final transcript verifying the conferral of the undergraduate (for the M.Div., M.T.S. and M.R.E.) or seminary (for the Th.M.) degree.

Persons who do not matriculate at the time for which they were originally admitted forfeit admission unless they present a written request for postponement to the Assistant Dean for Admissions and Student Life.

Transfer of Credit. Transfer of credit from theological schools accredited by the Association of Theological Schools is allowed by the Divinity School towards the Master of Divinity, Master of Religious Education, and Master of Theological Studies degrees. Credit from another institution will normally be limited in the M.Div and M.R.E. programs to one-third of the total number of credits required for graduation by the Divinity

*Figures are based on 1987-88 charges and are subject to change.

School (and to one-quarter for the M.T.S.). In each case a letter of honorable dismissal from the school from which transfer is made is required along with a transcript of academic credits. Applicants for transfer into a degree program are evaluated on the same basis as other applicants.

Conduct of Students

Duke University expects and will require of all its students continuing loyal cooperation in developing and maintaining high standards of scholarship and conduct. The University wishes to emphasize its policy that all students are subject to the rules and regulations of the University currently in effect, or which are put into effect from time to time by the appropriate authorities of the University. Any student, in accepting admission, indicates willingness to subscribe to and be governed by these rules and regulations and acknowledges the right of the University to take such disciplinary action, including suspension and/or expulsion, as may be deemed appropriate, for failure to abide by such rules and regulations or for conduct adjudged unsatisfactory or detrimental to the University.

The Divinity School expects its students to participate in a communally shared concern for growth in life appropriate to Christian faith and to the dignity of their calling.

Readmission to Duke Divinity School

Persons seeking readmission to the Divinity School's degree programs must complete the following requirements: (1) submit a new application; (2) submit an additional statement detailing reasons for withdrawal and reasons for seeking readmission at this time, and describing activities and employment undertaken since withdrawal; (3) submit the names of at least three persons willing to serve as references, one of which must be an ecclesiastical official; and (4) transcripts of all academic work undertaken since withdrawal from the Divinity School.

These new materials, supplemented by the individual's original application and Divinity School academic and field education files, will be reviewed by the members of the Admissions Committee for an admission decision. An interview with the Assistant Dean for Admissions prior to the processing of the application for readmission is encouraged and may be required. Any questions about readmission procedures should be addressed to the Assistant Dean for Admissions. Applications for readmission will be evaluated on the basis of academic attainment, future promise for the ministry, and vocational clarity and commitment.

Community Life



Corporate Worship

One of the most important aspects of training for Christian life is vigorous, inspiring, and varied participation in corporate worship. This corporate life of the Divinity School is centered in York Chapel where three services are held weekly— a service of prayer on Tuesday, a service of preaching on Wednesday, and a service of word and table on Thursday. These services are led by members of the faculty, the student body, and guests. Services are voluntary but have been and will continue to be sources of inspiration and strength to the members of the community.

The Divinity School enjoys a particularly close relationship with Duke Chapel. Throughout the year, Divinity School administrators and faculty, as well as guests of national and international stature, preach at Sunday morning worship services. Each year several or more of our students join the 200-plus member Duke Chapel Choir which provides choral music on Sunday mornings and special music programs throughout the academic year, including an annual Christmas performance of Handel's *Messiah*. Divinity students and faculty also contribute to the leadership of the ministry of Duke Chapel by chairing and serving on standing committees: Faith and the Arts, Supportive Ministries, Worship, Prophetic Concerns, and Leadership and Development.

Living Accommodations

Town House Apartments. Duke University operates Town House Apartments primarily for graduate and professional school students. Others may be housed if vacancies exist. The setting of these apartments provides single graduate students a comfortable, home-like atmosphere. Sixteen of the thirty-two air-conditioned apartments are equipped for two students, and the remaining sixteen units are equipped for three students.

Central Campus Apartments. Duke University operates a 500-unit housing facility known as Central Campus Apartments. The complex provides basic housing for undergraduate and single graduate students. Assignments are made on a first-apply, first-assigned basis.

One-bedroom and two-bedroom apartments are fully furnished.

Application Procedures. When students are informed of their acceptance to the Divinity School, they will also receive a form on which to indicate their preference for University housing. This form should be returned to the Department of Housing Manage-

ment. Detailed information on the types of accommodations and application forms will be forwarded to the accepted student. However, if additional information is desired prior to a student's acceptance, please write to the Department of Housing Management, Duke University, Durham, North Carolina 27706.

Off-Campus Housing. The Department of Housing Management maintains lists of rental apartments, rooms, and houses provided by Durham property owners or real estate agents who will agree not to discriminate in the rental of property because of race, sex, creed, or nationality of a prospective tenant. These lists are available in the Central Campus office. Off-campus rental properties are not inspected or approved, nor does the University or its agents negotiate with owners for students, faculty, or staff. The majority of divinity students live in off-campus apartment complexes because of their proximity to the school and their competitive rental rates. A listing of such complexes can be secured from the Department of Housing Management of the University or from the Office of Admissions and Student Life of the Divinity School.

Food Services. Food service facilities located throughout the Duke campus include both board plan and cash operations. Graduate and professional students are welcome to eat in any of the board plan cafeterias at guest meal prices or they may participate voluntarily in any of the point plans. Details are available from the Food Services Business Office, 106 West Campus Union Building. Board plans in the Blue and White Room Cafeteria and the East Court Cafeteria provide participants and their guests with unlimited seconds-style meals throughout the week at set prices. Dining facilities on the West Campus include a cafeteria with multiple-choice menus, the Oak Room with table service, and the Cambridge Inn with fast foods and beverages. The Bryan Center has a snack bar and a Rathskeller, both open all week, morning through late evening. East Campus has cafeteria service and a snack bar. Trent Drive Hall has a public cafeteria and Grade-li's, a snack bar/delicatessen. Duke University Food Services is the largest student employer on campus, and hires students in almost every food operation. A listing of open positions and areas is available from the Personnel Office, 106 West Campus Union Building.

Student Health

The aim of the University health service is to provide medical care and health advice necessary to help the student enjoy the University community. To serve this purpose, both the University health service clinic and the University infirmary are available for student health care needs. A separate fee for this service is assessed.

The main components of the health service include the University health service clinic, located in the Pickens Building on West Campus, and the University infirmary in Duke Hospital South. Emergency transportation, if required, can be obtained from the Duke campus police. Residential staff personnel or Divinity School administrators should be consulted whenever possible for assistance in obtaining emergency treatment.

The facilities of the University health service clinic are available during both regular and summer sessions to all currently enrolled full-time students. The facilities of the University infirmary are available during the regular sessions from the opening of the University in the fall until graduation day in the spring to all currently enrolled full-time students.

The University has made arrangements for a Student Accident and Sickness Insurance Plan to cover all full-time students for a twelve-month period. For additional fees a student may obtain coverage for a spouse or spouse and child. Although participation in this program is voluntary, the University expects all graduate students to be financially responsible for medical expenses above those covered by the University student health program through the University accident and sickness policy, a private policy, or personal financial resources. Students who have equivalent medical insurance or wish

to accept the financial responsibility for any medical expense may elect not to take the Duke plan by signing a statement to this effect. Each full-time student in residence must purchase this student health insurance or indicate the alternative arrangement. The student accident and sickness insurance policy provides protection twenty-four hours per day during the full twelve-month term of the policy for each student insured. Students are covered on and off campus, at home, or while traveling between home and school and during interim vacation periods. Term of the policy is from opening day in the fall. Coverage and services are subject to change each year as deemed necessary by the University in terms of costs and usage.

All full-time and part-time degree candidate students are required to enroll in the Student Accident and Sickness Insurance Policy unless they show evidence by completing the appropriate waiver statement contained on the remittance form of the University invoice indicating that they are covered by other generally comparable insurance. This statement requires that the name of the insurance company and the policy number be indicated as well as the signature of the student or parent. Also, this requirement may be waived by signing the appropriate space on the University invoice indicating willingness to assume the medical costs of any sickness or accident.

Married students are expected to be financially responsible for their dependents, providing for hospital, medical, and surgical care, since their dependents are not covered at any time by student health.

The resources of the Duke University Medical Center are available to all Duke students and their spouses and children. Charges for any and all services received from the Medical Center are the responsibility of the student as are the charges for services received from physicians and hospitals not associated with Duke University.

Counseling and Psychological Services. Counseling and Psychological Services (CAPS) is a component of student services which provides a coordinated, comprehensive range of counseling and developmental services to assist and promote the personal growth of Duke students. The professional staff is composed of psychologists, clinical social workers, and psychiatrists experienced in working with students of all ages. They provide evaluation and brief counseling/psychotherapy regarding a wide range of concerns, including such issues as self-esteem and identity, family relationships, academic performance, dating, intimacy, and sexual concerns. While students' visits with counselors are usually by appointment, a walk-in consultation service is provided two hours each weekday for students with urgent personal concerns.

Each year CAPS offers a series of self-development seminars focusing on skills development and special interests. These explore such interests as stress management, assertiveness training, career planning, couples' communication, and study skills. Interested students may call or come by CAPS for further information.

As Duke's center for administration of national testing programs, CAPS also offers a wide variety of graduate/professional school admission tests and professional licensure and certification examinations. The staff is also available to the entire University community for consultation and educational activities in student development and mental health issues affecting not only individual students but the campus community as a whole. They work with campus personnel, including administrators, faculty, student health staff, religious life staff, resident advisers, and student groups, in meeting needs identified through such liaisons. Staff members are available to lead workshops and discussion groups on topics of interest to students.

CAPS maintains a policy of *strict confidentiality* concerning information about each student's contact with the CAPS staff. If a student desires that information be released to anyone, written authorization must be given by the student for such release.

There are no charges for initial evaluation, brief counseling/psychotherapy, or self-development seminars. If appropriate, referral may be made to other staff members or a wide variety of local resources.

Appointments may be made by calling 684-5100 or coming by the office in 214 Old Chemistry Building, West Campus, between 8:00 A.M. and 5:00 P.M. Monday through Friday. If a student's concern needs immediate attention, that should be made known to the secretary, and every effort will be made to arrange for the student to talk with a staff member at the earliest possible time.

Motor Vehicles

Each student possessing or maintaining a motor vehicle at Duke University must register it at the beginning of the academic year. If a motor vehicle is acquired and maintained at Duke University after academic registration, it must be registered within five calendar days after operation on the campuses begins. Resident students are required to pay an annual fee of \$50 for each motor vehicle or \$25 for each two-wheeled motor vehicle. Students first registering after 1 January are required to pay \$30 for a motor vehicle or \$15 for a two-wheeled motor vehicle.

At the time of registration of a motor vehicle, the following documents must be presented: the state vehicle registration certificate, a valid driver's license, and satisfactory evidence of automobile liability insurance coverage with limits of at least \$10,000 per person and \$20,000 per accident for personal injuries, and \$5,000 for property damage, as required by the North Carolina motor vehicle law.

If a motor vehicle or a two-wheeled motor vehicle is removed from the campus permanently and the decal is returned to the traffic office prior to 20 January there will be a refund of one-half of the fee paid for either a motor vehicle or a two-wheeled motor vehicle.

Student Activities and Organizations

In the absence of common living and dining accommodations, community life in the Divinity School centers around a number of organizations and activities. The richness of life prevents more than a very selective listing of activities and organizations.

A primary center for community is a morning chapel service held every Tuesday, Wednesday, and Thursday in York Chapel while school is in session. Faculty and students share joint responsibility for these services which attempt to express the variety and diversity of theological and liturgical perspectives represented in the membership of the community. These chapel services are followed by a fellowship hour in the Student Lounge where hot beverages and pastries are served to a group that on most days includes students, faculty, administrators, support staff, student spouses and children, and visitors.

In addition to overseeing the planning of the regular morning chapel services, the student-faculty Worship Committee develops a number of occasional worship experiences throughout the academic year in keeping with the liturgical calendar and church festivals. Special interest groups growing out of and related to the Worship Committee include such sub-committees as Sacred Movement and Dance, Worship and the Arts, and Liturgical Environment. Still other worship opportunities are available through Duke Chapel where midday and evening prayer services on weekdays during the school year, weekly Sunday worship services and Eucharists, and festival services are held.

Several informal groups exist whose major purpose is to provide students with opportunities to express and share personal, professional, and spiritual development with each other in weekly meetings on the campus and at home. Among these are covenant discipleship, prayer and contemplation, and lectionary discussion groups.

The Student Association. The officers of the Student Association are elected and serve as an executive committee for conduct of the business of the Representative Assembly.

The purpose of the association is to channel the interests and concerns of Divinity School students to the following ends:



1. to provide student programs and activities
2. to represent students to the faculty and administration
3. to represent students with other Duke University organizations; and
4. to represent students in extra-University affairs.

The Community Life Committee of the Student Representative Assembly annually plans at least twelve community-wide events for students and faculty. Weekend retreats present students with an opportunity to become better acquainted with each other and with faculty, and to explore matters of personal, professional, or spiritual concern. Dialogues on ministry occurring through the year help introduce students to practicing ministers and their personal, professional, and spiritual struggles and growth.

The Christian Social Action Committee of the Student Representative Assembly serves as a forum through which persons explore what it means to live out the gospel in a social context as witnesses of Christ. As an organization that prays for the support of the community and for guidance concerning social issues and also seeks to create awareness so that our vision of God's will in society is enlarged, CSA meets on a weekly basis; hosts forums on topics such as capital punishment, sexuality and the Church, and peace with justice; provides leadership for events such as the annual Crop Walk and Red Cross blood drives; and coordinates the matching of volunteers with church and community agencies.

Divinity School Choir. A student organization of long standing is the Divinity School Choir. Membership is open to all qualified students. The choir sings regularly for weekday worship and at special seasonal programs and services. New members are chosen by informal auditions which are arranged for all who are interested.

Divinity Spouses. Divinity Spouses is an organization which offers the spouses of regularly enrolled students opportunities for sharing interests and concerns. The spouses' program, which includes topical monthly meetings with a variety of speakers, small interest groups, and special projects, seeks to encourage and provide ways for spouses to become a more integral part of the Divinity School community. Monthly meetings are open to all persons. A favorite event each year is a progressive dinner for couples involving the visitation of a number of faculty homes.

Black Seminarians' Union. This is an organization of black students whose major purposes are to insure the development of a theological perspective commensurate with the Gospel of Jesus Christ and relevant to the needs of black seminarians and the black church and to improve the quality of life academically, spiritually, politically, and socially in the Divinity School.

Student Pastors' Association. Students actively serving their denominations in an ordained or lay capacity have the opportunity to meet, to share, to plan, and to act on their common needs and concerns.

Women's Center. The Women's Center serves the entire Divinity School community through a focus on the special needs and contributions of women in ministry in and to the Church and society. The office, coordinated by two women, is a resource center for the whole community, in addition to a support and action center for women in particular.

Christian Educators Fellowship. As a professional organization for persons who serve or intend to serve as professional Christian educators, CEF interprets the role of the Christian educator in the total ministry of the Church and provides support, fellowship, and professional relationships. In addition to monthly program meetings, a Christian education emphasis week is held each spring.

Order of St. Luke. Formed to bring about a recovery of the worship and sacramental practice which has sustained the Church since its formation in apostolic times, the

Order of St. Luke is a religious order within the United Methodist Church that additionally is concerned to help recover the spiritual disciplines of John and Charles Wesley as a means of perceiving and fulfilling the mission for which the Church was formed. Membership in the Order is open to lay persons, seminarians, clergy of the United Methodist Church, and to persons of other denominations. The Divinity School chapter of the Order of St. Luke was chartered in the fall of 1987.

Episcopal Students Fellowship. Recognizing a need for denominational support, fellowship, and worship life, Episcopal students organized the Episcopal Students Fellowship in the spring of 1988. In addition to informal gatherings and group meals, the organization worships together three times a week: Eucharist on Tuesday mornings, Morning Prayer on Wednesday mornings, and Evening Prayer on Thursday afternoons.

Cultural Resources

Divinity School students enjoy access to the many resources of the University community, particularly in the area of the performing arts. Two active campus film societies sponsor screenings of major motion pictures on Saturday and Sunday evenings. Other films of a classical nature are offered on Tuesday through Thursday nights, with free films for children scheduled every other Saturday morning. Opportunities in music, dance, and drama are provided by the following: the Duke Artists Series, Broadway at Duke, the Chamber Arts Society, Hoof 'n Horn, the Duke University Collegium Musicum, Duke Players, Duke Dance, the Duke University Symphony Orchestra and the Wind Symphony, the Duke University Jazz Ensemble, the Ciompi Quartet, Dance Black, and the Modern Black Mass Choir, among others.

Athletic Programs

In addition to unrestricted access to all University athletic and recreational facilities, divinity students enjoy other benefits from Duke's commitment to college athletics. The University is a member of the Atlantic Coast Conference of the National College Athletic Association, and offers intercollegiate competition in a variety of sports. Special admission rates to football and basketball games are available to graduate and professional students. The University supports a strong intramural program in which the Divinity School participates enthusiastically. In recent seasons the school has fielded teams in football, men's, women's, and co-rec basketball, volleyball, soccer, and softball.

Financial Information



Fees and Expenses

Master of Divinity, Master of Theological Studies, and Master of Religious Education Candidates. The table below lists basic minimum expenditures. In addition to the fees cited here, there is an admission fee of \$50 which is applied to the first term bill. See relevant section on admissions for details.

	<i>Per Semester</i>	<i>Per Year</i>
Tuition—M.Div., M.T.S., and M.R.E.	\$2,740	\$5,480
Student Health Fee	125	250
Approximate Cost of Meals	1,030	2,060
Student Representation Association Fee	8	16

Tuition will be charged at the rate of \$685 per course. The figures shown are for a program carrying eight courses per year. Students will be charged for additional course enrollments.

Master of Theology Candidates. A student who is a candidate for the Th.M. degree will be liable for tuition on the basis of eight courses at the rate of \$685 per course. All other costs and regulations for the Th.M. degree are the same as those for the M.Div. degree. Th.M. students are not ordinarily eligible for student financial aid.

Special Student. A special student is one who is enrolled for academic credit, but who is not a candidate for a degree at that time. The tuition will be charged on a course basis. Other costs and regulations are the same as those for M.Div. candidates. No financial aid is available.

Audit Fee. Anyone seeking to audit a course in the Divinity School must, with the consent of the instructor concerned, secure permission from the Associate Dean's office. In accordance with the general University practice, a fee of \$100 per course will be charged to all auditors who are not enrolled as full-time students.

Estimated Living Expenses. The total cost for a student to attend the Duke Divinity School varies according to individual tastes and requirements; however, experience indicates that a single student may expect to spend a minimum of \$13,500 for nine months and a married couple may expect to spend a minimum of \$18,500 for twelve months.

Housing Fees. Estimated minimal on-campus housing cost for a single student will be approximately \$3,000 during 1988-89. Presently the University does not provide

housing for married students. Housing fees are subject to change prior to the new academic year. A \$100 deposit is required on all reservations.

Rates for Central Campus Apartments will be quoted to applying students upon request to the manager of apartments and property. Refunds on housing fees will be made in accordance with the established schedules of the University.

Athletic Fee. Divinity School students may secure admission to all regularly scheduled University athletic contests held on the University grounds during the entire academic year by payment of the athletic fee of \$100 per year plus any federal tax that may be imposed. The fee is payable in the fall semester.

Payment and Penalty. Invoices for tuition, fees, and other charges will be sent by the Bursar's office which are payable by the invoice due date; no deferred payment plans are available. As a part of the agreement of admission to Duke University a student is required to pay all invoices as presented. If full payment is not received, a late payment charge as described below will be assessed on the next invoice and also certain restrictions as stated below will be applied.

If payment in the amount of the total amount due on the student invoice is not received by the invoice due date, a penalty charge will be accrued from the billing date of the invoice. The penalty charge will be at a rate of $1\frac{1}{3}$ percent per month (16 percent per annum) applied to the past due balance on the student invoice. The past due balance is defined as the previous balance less any payments and credits received during the current month and also any student loan memo credits, related to the previous balance, which appear on the invoice.

An individual will be in default of this agreement if the total amount due on the student invoice is not paid in full by the invoice due date. An individual who is in default will not be allowed to register for classes, receive a transcript of academic records, have academic credits certified, be granted a leave of absence, or receive a diploma at graduation. In addition, an individual in default may be subject to withdrawal from school.

Refunds of tuition and fees are governed by the following policy:

In the event of death a full tuition and fees refund will be granted.

In all other cases of withdrawal from school tuition will be refunded according to the following schedule: withdrawal before the opening of classes—a full refund; withdrawal during the first or second week—80 percent; withdrawal during the third through fifth week—60 percent; withdrawal during the sixth week—20 percent; withdrawal after the sixth week—no refund. No refund will be granted for reduction in course load after drop-add period.

Tuition or other charges paid from grants or loans will be restored to those funds on the same prorata basis and will be refunded to the student or carried forward.

These regulations apply to all Divinity School students—degree candidates, special students, and auditors.

Debts. No records are released, and no students are considered by the faculty as candidates for graduation, until they have settled with the Bursar for all indebtedness. Bills may be sent to parents or guardians provided the Bursar has been requested in writing to do so. Failure to pay all University charges on or before the times specified by the University for the semester will bar the student from class attendance until the account is settled in full.

Motor Vehicle Registration Fee. There is a \$50 registration fee for all automobiles (\$20 for two-wheeled motor vehicles) used on campus. Students who register their automobile will not be charged for registration of a motorcycle. For specifics see the chapter "Community Life."

Student Financial Aid

A student should select a school on the basis of educational opportunity. At the same time financial consideration will be a legitimate and often pressing concern. Each student should formulate at least a tentative plan for financing the entire seminary education. Although the exact method of financing the full theological degree may not be assured at the beginning, a student should have a clear understanding of the expenses and available sources of income for the first year and the assurance that there exist ways of financing subsequent years.

The Committee on Financial Aid will counsel the student concerning financial needs and possible resources. There is constant review of available resources in order to assist the greatest number of students. However, the basic financial responsibility belongs to the student who is expected to rely upon personal and family resources and earning and borrowing power. Other resources may include the student's church, civic groups, foundations, and resources of the school which may include grants, loans, field education grants, and employment. It is the goal of the financial aid office to assist each student in planning a financial program so that as little indebtedness as possible will be incurred.

The total amount available through the Divinity School is limited. Further, the conditions set forth by the individual or institutional donors determine the circumstances under which the grants can be made. *Almost without exception the donors require ecclesiastical endorsement and/or declaration of ministerial vocational aim.*

The principles regarding the disbursement of financial aid are as follows:

1. Financial aid is recommended on the basis of demonstrated need. All students must file an application which substantiates need and provides full information on potential resources. This is essential in order to make Divinity School funds available to the greatest number of students. In order to receive assistance in any form from the Divinity School, a student must be enrolled for at least three courses per semester and maintain an overall academic average of 2.0 or higher. Falsification of a financial aid application is a serious offense subject to the provisions of the Divinity School's Judicial Procedures.
2. Grants will be made within the limits of the conditions set forth governing each source.
3. The conditions at the beginning of the academic year determining financial needs shall be the governing criteria for the year. Financial aid programs are set up on a yearly basis, except for those students who may enter the second semester and/or those few whose status may change.
4. Financial aid grants are made on a one-year basis. The assistance may consist of scholarships, loans, tuition grants, grants-in-aid, field education grants, and employment, which may be worked out in various combinations on a yearly basis. A new application must be filed each year.
5. Grants in aid, or "tuition grants," are ballooned for the first year of study to assist students as much as possible through their transitional first year at Duke. Consequently grants for the second and third years of study will be somewhat less than those awarded for the critical first year.
6. Application for financial aid may be made by entering students at time of admission or currently enrolled students by December 1. Notification will be given after committee approval. Student pastors serving United Methodist churches can be notified after the pastoral charge and Annual Conference determine salary schedules. Financial aid applications for students anticipating fall matriculation are reviewed beginning the prior December. Applications for assistance will not be accepted after June 1 for August enrollment or after December 15 for January enrollment.
7. Ordinarily financial aid is not available beyond six semesters (eight for pastors on reduced load).

8. Full-time students not participating in the field education program may work up to 20 hours per week in outside employment. Persons participating in the field education program, either summer or winter, may not engage in other forms of employment.
9. Students who have questions about the Divinity School's response to their financial aid request should first speak with the financial aid assistant. Where desired, students may file an appeals form for full review by the financial aid appeals committee.
10. Special students and Th.M. students (with the exception of one international scholar annually) are not eligible for any form of financial assistance from the Divinity School. Th.M. students are eligible to apply for denominational and federal loans.

Financial Resources

Personal. In order that both the church and the Divinity School may be able to extend the use of their limited funds to as many students as possible, a student who desires a theological education should be willing to defray as far as possible the cost of such an education. Resources may include savings, earnings, gifts, support or loans, and if married, earnings of a spouse. In calculating anticipated income, the student first considers personal resources.

Church. Many local churches and conferences or other governing bodies provide gifts and grants for theological education, such as ministerial education funds which provide grants and/or service loans to theological students. The student makes application to the home church, Annual Conference, Presbytery, or other governing body. The financial aid office cooperates with these church agencies in making recommendations and in handling the funds. *United Methodist students and others must be under the care of the appropriate church body to be eligible for church support.* The school cannot compensate for a student's indisposition to receive church funds when such are available on application through the Annual Conference Ministerial Education Fund or other agencies.

The Divinity School, as a member school of the Association of United Methodist Theological Schools, takes cognizance of and subscribes to recommended policy and practice regarding the administration of United Methodist Church funds for student financial aid as adopted by the association, 1 June 1970, and as bearing upon tuition grants, as follows:

Resources for tuition grants, scholarships or the like are primarily available to students with declared vocational aims leading to ordination or recognized lay ministries and supported by commendation or endorsement of appropriate church representatives. At the same time, we believe that consideration for a tuition grant may be accorded to students who adequately indicate conscientious concern to explore, through seminary studies, a recognized church-related vocation. Finally, it is our judgment that, where the above-mentioned conditions are deemed to be absent respecting a candidate for admission, the decision to admit such a candidate should be without the assurance of any tuition subsidy deriving from church funds. (*AUMTS Minutes*, 1 June 1970.)

Divinity School Scholarships. A limited number of scholarships are available to encourage qualified students to pursue their preparation for the Christian ministry.

Scholarships for Academic Merit. Each year the Divinity School awards a maximum of ten scholarships to entering junior students on the basis of academic excellence in their undergraduate programs and promise for Christian ministry. The specific amount of a scholarship for academic merit will depend upon a student's demonstrated financial need and will not exceed a maximum \$4,500.

Ten scholarships for academic achievement are given for the middler and senior years of study. These awards go to those students with the greatest promise of service to the Church and highest academic achievement. The scholarship ranges up to \$4,500 in value, depending upon the recipient's *demonstrated* financial need, and academic course load.

Distinguished Service Scholarship. Each year the Divinity School offers a maximum of ten scholarships ranging up to \$4,500 in value to those students who combine excellence in academic achievement with outstanding promise for ministry in the local church. These scholarships are renewable in the second and third years if the student continues to exhibit (1) exceptional academic achievement with a grade point average of 3.35 or higher, and (2) vocational promise as reflected in participation in field education and the Divinity School community.

The Dean's Scholarship. The Dean's scholarships are awarded to at least ten recipients each year. These persons must represent strong promise for Christian ministry, academic achievement, and demonstrated financial need. Factors taken into account are ethnic origin, missional responsibilities for the Church at home and abroad, and special denominational needs. The specific amount of the scholarship is based upon demonstrated need and may go up to \$3,500 per year. The scholarship is renewable for two years assuming continued academic attainment, development of ministerial promise, and demonstrated financial need.

International Student Scholarships. In cooperation with the Crusade Scholarship Committee of the United Methodist Church and other authorized church agencies, students are selected and admitted to courses of study. Scholarships for such students are provided from the Lewis Clarence Kerner Scholarship Fund and from individual churches and private philanthropy.

Tuition Grants. These are available in amounts commensurate with demonstrated need as adjudged by the Committee on Financial Aid. Entering students may apply, on notice of admission, by submitting the financial aid application to the Office of Financial Aid. Enrolled students may apply by annual renewal of their financial aid request. Because of the purpose and attendant educational objectives of the school, resources for tuition grants are primarily available to students with declared aims leading to ordination or recognized lay ministries.

Field Education Grants. Varying amounts ranging from \$2,000 (winter) to a maximum of \$4,750 (summer) are made available through the Divinity School to students who are approved to participate in the field education program. The Offices of Field Education and Financial Aid work together in determining placement and grant amount. This program includes the summer interns, winter interns, and student pastors. See full description under the section on field education.

Duke Endowment Student Pastor Grants. United Methodist students serving under episcopal appointment as student pastors in the state of North Carolina may qualify for tuition assistance of no more than \$2,100 through the Duke Endowment. The Financial Aid Committee will determine student eligibility for such assistance after appointments are read at the meetings of the two North Carolina United Methodist Annual Conferences.

Loans. Loan funds held in trust by the University, as well as United Methodist student loans and funds supplied by the federal government through the National Defense Education Act of 1958 are available to qualified students. The application must be submitted by 1 July.

Unless otherwise indicated, all correspondence concerning financial aid should be directed to: Financial Aid Office, The Divinity School, Duke University, Durham, North Carolina 27706.

Employment. Students or spouses desiring employment with the University should apply to the Director of Personnel, Duke University. Students or spouses make their own arrangements for employment either in the city of Durham or on campus.

Endowed Funds

Certain special funds have been established as endowments, the income from which is used to provide financial aid through scholarships and field education grants for students, support for professorships, and enhancement of the Divinity School program. The funds listed below serve as essential resources for the preparation of persons for leadership in Christian ministry.

The Alumni Scholarship Fund was established in 1976 by the graduates of the Divinity School to provide financial support for ministerial candidates.

The Martha Anne Hills Andrews and John Spell Andrews Scholarship Fund was established in 1985 by Don W. Andrews in memory of his wife, Martha Anne, Divinity School Class of 1982, and their son, John. The fund income provides student scholarships with preference given to women and men from South Carolina.

The R. Ernest Atkinson Legacy was established in 1952 under the will of the Reverend R. Ernest Atkinson, Trinity College Class of 1917, Richmond, Virginia, for ministerial student assistance.

The Hargrove, Sr., and Kelly Bess Moneyhun Bowles Fund was established in 1983 by John Bowles, Hargrove Bowles, Jr., R. Kelly Bowles, and James Bowles in memory of their parents. Income from the fund is for scholarship assistance in the Divinity School.

The Fred W. Bradshaw Fund was established in 1975 through a bequest from Fred W. Bradshaw of Charlotte, North Carolina, to be utilized for the enrichment of the educational program of the Divinity School, especially to support distinguished visiting scholars and outstanding students.

The Emma McAfee Cannon Scholarship was established in 1969 by Bishop William R. Cannon in memory of his mother, Emma McAfee Cannon, and is designated to assist students from the North Carolina Annual Conference of the United Methodist Church who are studying for the pastoral ministry and planning to serve in the North Carolina Conference.

The Clark Fund for Emergency Assistance was established in 1986 by Mrs. Kenneth W. Clark as a discretionary aid resource to help meet the needs of students who experience unforeseen crises due to serious illness, injury, or family emergencies.

The Kenneth Willis Clark Lectureship Fund was established in 1984 by Mrs. Adelaide Dickinson Clark in memory of her husband, Kenneth W. Clark, professor of New Testament in the Divinity School, 1931-67. The fund provides for distinguished lectureships in New Testament studies and textual criticism.

The James T. Cleland Endowment Fund was established by friends and students of James T. Cleland to create a Chair of Preaching in his honor. He was Dean of the Duke University Chapel from 1955 to 1973 and professor of preaching in the Divinity School.

The E. M. Cole Fund was established in 1920 by Eugene M. Cole, a United Methodist layman of Charlotte, North Carolina, to support the education of ministers.

The Lela H. Coltrane Scholarship was established in 1980 by Mrs. David S. Coltrane of Raleigh, North Carolina, and friends of Mrs. Coltrane, to encourage excellence in ministry.

The Robert Earl Cushman Endowment Fund was established in 1980 to create a professorship in honor of Robert Earl Cushman, research professor of systematic theology and Dean of the Divinity School, 1958-71.

The Dickson Foundation Awards were established by the Dickson Foundation of Mount Holly, North Carolina, to provide assistance to students who demonstrate financial need and superior ability.

The Duke Endowment, established in 1924, provides under the Maintenance and Operation Program, field education grants for students of the Divinity School who serve in rural United Methodist churches under the Endowment and Field Education Program.

The Henry C. Duncan Fund was established in 1982 by the men of the Village Chapel, Pinehurst, North Carolina, to honor their pastor, Chaplain Henry C. Duncan, a member of the Divinity School Class of 1949. Income from the fund is used for scholarships.

The N. Edward Edgerton Fund was established in 1939 by N. Edward Edgerton, Trinity College Class of 1921, of Raleigh, North Carolina, for the support of ministerial education.

The Will Ervin Scholarship Fund is an endowment established by Will Ervin in 1980 and administered by the Richlands United Methodist Church, Richlands, North Carolina, for students preparing for Christian ministry.

The Randolph R. and Shirley D. Few Scholarship Endowment Fund was established in 1987 by Mr. and Mrs. Few of Durham, North Carolina, to provide assistance for ministerial students from the North Carolina Conference of the United Methodist Church.

The George D. Finch Scholarship Fund was established in 1972 by George David Finch, Trinity College Class of 1924, of Thomasville, North Carolina, for the support of ministerial education.

The Edgar B. Fisher Memorial Scholarship Endowment Fund was established in 1987 by the family of Dr. Fisher to commemorate his life of distinguished service in ministry and to provide assistance for men and women preparing to be United Methodist pastors in North Carolina.

The W. Kenneth and Martha O. Goodson Fund was established in 1981 to honor Bishop Goodson, Divinity School Class of 1937 and retired Bishop of the United Methodist Church, and Mrs. Goodson. The fund was doubled in 1985 by a major gift for scholarships and parish ministry support from Bishop and Mrs. Goodson.

The James A. Gray Fund was presented to the Divinity School in 1947 by James A. Gray of Winston-Salem, North Carolina, for use in expanding and maintaining its educational services.

The Ned and Carmen Haggar Scholarship Fund was established in 1985 by Carmen Haggar of Pinehurst, North Carolina, through her son, Alexander J. Haggar, to support theological education at Duke.

The P. Huber Hanes Scholarship was established by the late P. Huber Hanes of Winston-Salem, North Carolina, Trinity College Class of 1900, as a scholarship fund for Duke University, a portion of which is used to provide financial assistance for Divinity School students.

The Richard R. Hanner, Jr. Scholarship was established in 1973 by friends of the late Richard R. Hanner, Jr., Trinity College Class of 1953, to support advanced work in Christian education.

The Russell S. and Julia G. Harrison Scholarship Fund was established in 1980 by Russell S. Harrison, Divinity School Class of 1934, and his wife, Julia G. Harrison. The fund supports persons from the North Carolina Conference of the United Methodist Church preparing for ordained ministry as local church pastors.

The Margaret Blount Harvey Fund was established in 1982 by C. Felix Harvey and Margaret Blount Harvey, Trinity College Class of 1943, of Kinston, North Carolina, to provide scholarship assistance for students preparing for parish ministry.

The H. E. S. Inc. Scholarship is a grant from the H.E.S., Inc., Los Angeles, California, founded in 1931 by Dr. A. U. Michaelson, which provides two full-tuition scholarships each year.

The Stuart C. Henry Scholarship Fund was established in 1986 by Mr. and Mrs. A. Morris Williams, Jr., of Villanova, Pennsylvania, to honor the distinguished teaching career of Professor Henry and to provide assistance for students with preference given to those affiliated with the Presbyterian Church.

The Franklin Simpson Hickman Memorial Fund was established in 1966 by Mrs. Vera Castell Hickman in memory of her husband, Franklin S. Hickman, who served as professor of the psychology of religion, the Dean of the Chapel of Duke University, and the first preacher to the University. The fund income supports a regular visiting lecturer in preaching and provides financial aid to students who wish to specialize in the psychology of religion.

The George M. Ivey Scholarship Fund was established in 1948 by a gift of George M. Ivey, Trinity College Class of 1920, of Charlotte, North Carolina, for the support of ministerial education.

The George Washington Ivey Professorship, with initial funding by the Western North Carolina Conference of the United Methodist Church and later funding by George M. Ivey, George M. Ivey, Jr., Leon Ivey, and the Ivey Trust, is the oldest named professorship in the Divinity School.

The Jameson Jones Memorial Fund was established in 1982 by a bequest and memorial gifts following the untimely death of Jameson Jones, Dean of the Divinity School, 1981-82. The fund provides for the enrichment of programs and study opportunities.

The Charles E. Jordan Scholarship Fund was established in 1969 by the family of Charles E. Jordan, former Vice-President of Duke University, to support the education of ministers.

The Amos Ragan Kearns Professorship was established in 1970 by a gift from the late Amos Ragan Kearns of High Point, North Carolina, for a Chair in Religion.

The Lewis Clarence Kerner Scholarship was established in 1959 by Beatrice Kerner Reavis of Henderson, North Carolina, in memory of her brother and designated for the assistance of native or foreign-born students preparing for service in world Christian mission.

The Carl H. and Mary E. King Memorial Fund was established in 1976 by family and friends of Carl and Mary King, distinguished church leaders in Western North Carolina Methodism, to support students preparing for educational ministry in the parish.

The John Haden Lane Memorial Scholarship was established in 1968 by the family of John H. Lane to provide support for education in Christian ministry including chaplaincy and other specialized work.

The Thomas A. and Ann Marie Langford Fund was established in 1981 in honor of Dr. Thomas A. Langford, Dean of the Divinity School, 1971-81, and Mrs. Langford.

The Laurinburg Christian Education Fund was established in 1948 by members of the First United Methodist Church, Laurinburg, North Carolina, for ministerial education.

The D. M. Litaker Scholarship was originally established by Charles H. Litaker in 1946 in honor of his father, Dr. D. M. Litaker, Trinity College Class of 1890, and was specified for the Divinity School in 1977 by the Litaker family. The income is for support of persons preparing for ministry in the Western North Carolina Annual Conference of the United Methodist Church.

The Calvin M. Little Scholarship Fund was established in 1985 by the members of the First United Methodist Church, Mt. Gilead, North Carolina, to commemorate a generous bequest from Mr. Little and to affirm the important relationships between the church and the Divinity School.

The Robert B. and Mary Alice Massey Endowment Fund was established in 1980 by Mr. and Mrs. Massey of Jacksonville, Florida, for the support of excellence in ministry.

The Robert McCormack Scholarship was established by the Trustees of the Duke Endowment to honor Robert McCormack, Chairman of the Board of the Duke Endowment at the time of his death in 1982.

The J. H. McCracken Memorial Scholarship Fund was established in 1947 by Dr. J. H. McCracken, Jr., of Durham, North Carolina, in memory of his father, the Reverend Jacob Holt McCracken, a Methodist minister who served churches in North Carolina for fifty years.

The C. Graham and Gradie Ellen E. Mitchum Fund was established in 1985 by Dr. and Mrs. Kenneth E. Mitchum of Pittsboro, North Carolina, in memory of his father, a lay preacher, and in honor of his mother. The fund provides scholarships for students who have significant financial needs and a strong commitment for ministry in the local church.

The J. Alex and Vivian G. Mull Scholarship Endowment Fund was established in 1987 by the grant committee of the Mull Foundation of Morganton, North Carolina, as a memorial to Mr. and Mrs. J. Alex Mull who were leaders in education, business, and the church. Priority is given to students from Burke County, North Carolina.

The Myers Park Scholarship Fund was established in 1948 by members of the Myers Park United Methodist Church, Charlotte, North Carolina for ministerial education.

The Needham-Hauser Scholarship Endowment Fund was established in 1986 by Eugene W. Needham and his wife, Antoinette Hauser Needham, both Duke University graduates, of Pfafftown, North Carolina, to provide assistance for students committed to the parish ministry. Preference is given to persons from the Western North Carolina Conference of the United Methodist Church.

The W. Fletcher Nelson Scholarship was established in 1980 by friends of W. Fletcher Nelson, Duke Divinity School Class of 1930, of Morganton, North Carolina. He was responsible for the fund-raising efforts which enabled renovations and the building of the new wing of the Divinity School.

The W. R. Odell Scholarship was established in 1946 by the Forest Hills United Methodist Church, Concord, North Carolina, to honor Mr. Odell, a distinguished layman.

The Parish Ministry Fund was established in 1968 to provide continuing education opportunities for selected parish ministers and lay leaders from the Western North Carolina Conference of the United Methodist Church. The fund sponsors seminars, short study courses, and makes special grants for full-time study leaves. The program is administered by the Divinity School with the assistance of the Parish Ministry Fund's Board of Directors.

The Emma Leah Watson and George W. Perrett Scholarship was established in 1984 by Mrs. Perrett of Greensboro, North Carolina, to provide scholarships for students preparing for the ministry in the local church.

The Cornelius Miller and Emma Watts Pickens Memorial Fund was initiated in 1966 by the Pickens brothers to honor their parents. The fund income helps to support the Divinity School Media Center.

The Maude Simpson Pitts Scholarship Endowment Fund was established in 1986 by Mr. and Mrs. Noah O. Pitts, Jr., of Morganton, North Carolina, in memory of his mother. The fund provides support for students who are committed to parish ministry.

The William Kellon Quick Endowment for Studies in Methodism and the Wesleyan Tradition was established in 1985 by Mr. and Mrs. Stanley S. Kresge of Pontiac, Michigan, to support teaching, research, and publication in Methodist studies and to honor their pastor, William K. Quick, Divinity School Class of 1958.

The Gilbert T. Rowe Memorial Scholarship Fund was established in 1960 through the generosity of alumni and friends of the Divinity School to honor the memory of Dr. Rowe, professor of systematic theology.

The Elbert Russell Scholarship was established in 1942 by the Alumni Association of the Divinity School in honor of Dr. Russell, professor of Biblical theology and Dean of the Divinity School, 1928-1941.

The John W. Shackford Endowment Fund was established in 1985 by Margaret S. Turbyfill, Trinity College Class of 1940, of Newport News, Virginia, to provide student scholarships in memory of her father, John W. Shackford, who was a leader in religious education with the former Methodist Episcopal Church, South.

The Gaston Elvin Small Family Fund was established in 1984 by Mr. and Mrs. Gaston E. Small, Jr. of Elizabeth City, North Carolina. As an unrestricted endowment, the fund honors the Small family and their strong ties with Duke University, the Divinity School, and the United Methodist Church.

The Dolly L. Spence Memorial Scholarship Fund was established in 1984 by Royall H. Spence, Sr. of Greensboro, North Carolina, in memory of his wife and to provide financial support for ministerial students.

The Hersey E. and Bessie Spence Fund was established in 1973 by a gift from the estate of Hersey E. and Bessie Spence and designated to establish a Chair in Christian Education.

The Hersey E. Spence Scholarship was established in 1947 by the Steele Street United Methodist Church of Sanford, North Carolina, in honor of their former pastor and late professor in the Divinity School.

The David Johnson and Mary Woodson Sprott Fund was established in 1982 by the Sprott family of Winter Park, Florida, with appreciation for Duke-educated ministers and to provide student scholarships.

The Earl McCrary Thompson Scholarship was established in 1974 in honor of the late Earl McCrary Thompson, Trinity College Class of 1919, to support education for ministry.

The Wilson O. and Margaret L. Weldon Fund was established in 1983 by a friend to honor Dr. Weldon, Divinity School Class of 1934 and trustee-emeritus of Duke University, and Mrs. Weldon. Income from the fund is for student scholarships.

The A. Morris and Annabel Williams Fund for Parish Ministry was established in 1983 by Mr. and Mrs. A. Morris Williams, Jr., of Villanova, Pennsylvania, both graduates of Duke University. This fund honors A. Morris Williams, Divinity School Class of 1932, and the late Mrs. Williams. Income from the fund is designated for scholarships, continuing education, and creative program support for persons committed to Christian ministry through the local church.

The United Methodist Church makes a substantial contribution to the Divinity School by designating a percentage of its Ministerial Education Fund and World Service Offerings for theological education. The general Board of Higher Education and Ministry makes available annually two national United Methodist scholarships.

The Dempster Graduate Fellowships are awarded annually by the United Methodist Board of Higher Education and Ministry for graduates of United Methodist theological schools who are engaged in programs of study leading to the Ph.D. degree in religion. A number of Divinity School graduates have held these fellowships.

Field Education



A Program for Ministerial Formation

As the practice dimension of theological education, field learning is designed to assist students in: (1) sharpening and clarifying their Christian vocations; (2) developing identity as ministers by providing experience with a variety of ministry tasks; (3) providing a ground for the testing and reconstruction of theological concepts; (4) developing the ability to do critical and reflective thinking by relating theory and experience; (5) developing ministry skills to achieve an acceptable level of readiness for ministry; (6) integrating academic studies, personal faith experiences, and critical reflection into a personal spiritual foundation that produces a confident and effective ministry.

Field Education Credit Requirements

Two units of approved field education placement are required for graduation in the Master of Divinity degree program, one for the Master of Religious Education program. The Th.M. and M.T.S. degrees have no field requirements. A unit is defined by one term placement, either a full-time summer term of ten weeks or twelve weeks or an academic term of thirty weeks at fifteen hours per week. To be approved, the field setting must provide ministerial identity and role, distinct ministerial tasks, qualified supervision, a service-learning covenant, regular supervision conferences, and effective evaluation. Each unit also requires participation in orientation and reflective seminars.

To qualify for credit the student must apply and be approved for a credited placement, develop and complete a learning covenant with acceptable quality of work, cooperate with the supervisor, participate in a reflective seminar, and prepare an evaluation of the experience. Evaluation and grading will be done by the field supervisor, student, field education staff, and the teaching faculty of Church's Ministry B (in the case of the second field requirement).

The first field requirement will be completed by the end of the third semester of study, the second in the summer prior to, or during, the senior year.

Administering Ministerial Development

Development of ministerial competency is the responsibility of each student. If the Field Education staff questions a student's readiness for a field assignment, a committee consisting of the student's faculty adviser, a member of the Field Education Com-



mittee, and the Field Education staff will assess the student. Divinity School admission materials, evaluation by the Field Education staff, and if necessary, additional professional evaluation will be used. This committee will approve the field assignment, or refer the student to remedial avenues of personal and professional development, including, if necessary, a leave of absence or withdrawal from school. Such action will be referred to the Academic Standing Committee for inclusion in assessment of that student's progress towards graduation. When, for whatever reason, a student's evaluation from a field setting raises questions about the student's ministerial learning and/or growth, or that person's use of the setting for those purposes, the same committee will be convened to assess the student and the experience and to make appropriate recommendations to the Academic Standing Committee.

Field Settings for Ministerial Formation

Students may elect to meet their field learning requirement in one of several ways. They may elect a voluntary ministry avenue. The setting must meet the requirements set by the Divinity School but students, with the direction of the Field Education Office, have latitude in selecting their settings. They must invest a minimum of 300 hours in preparation and presence, a minimum of ten weeks, in the setting and comply with the requirements specified by the Divinity School.

Students may use a "private contract" field setting where they have found employment by a congregation or church agency. Again, advance approval by the Field Education Office for credit, 300 hours of preparation and presence over a minimum of 10 weeks, plus compliance with Divinity School requirements regarding setting, supervision and structure are required.

Finally, field placements are often made in settings that have been developed and approved by the Divinity School. These offer opportunities for ministerial service with supervision, pastoral identity, and evaluation.

A wide variety of ministry settings is available for varying student goals: parish settings (rural, suburban, urban, larger parish patterns, and staff team ministries); institutional settings (mental health institutions, prisons, mental retardation centers, and retirement homes); campus ministry settings (positions on the campuses of a variety of schools as well as internships in college teaching).

While the Divinity School offers this rich diversity of settings for personal and ministerial development, the large majority of assignments fall in local churches in small communities. Because of the Divinity School's ties with the United Methodist Church, most field placements occur in that tradition. However, the Divinity School will do everything possible to see that each student completes at least one assignment in his or her own denominational tradition. Each student is required to complete one credit in a local church setting, unless permitted by the Field Education Committee to do otherwise.

Internship Program

A full-time internship program embraces both a full-time salaried position and a learning commitment in a single context over a period of time ranging from nine to twelve months. These assignments are designed to engage the student in considerable depth in particular ministry skills in a setting relevant to specific vocational goals. Internships must encompass an advanced level of specialized field experience which is more complex and extensive in its serving and learning potential than the basic field education short-term placement. The internship may be individually designed to meet the needs and interests of the student, provided that the plan includes a student learning covenant, an agency service contract, approved supervisory standards, and an investigation-research project acceptable to the assigned faculty adviser. When these components are satisfactorily met and the evaluation reports are filed, credit for up to two courses (six

semester hours) may be assigned for the internship. No additional academic credit may be accumulated during the intern year. Grading for the two course credits will be on a pass/fail basis.

Internship settings may be student-initiated or negotiated by the school. In either case an agency contract covering all agreements must be made and filed with the Field Education Office. Types of settings occasionally available for internship placement include: campus ministry and college chaplaincy positions; parish ministry positions—such as associate pastor, parish director of education; institutional positions; and a world mission internship of one to three years of national or overseas service. Other internships in the church or in specialized ministries in the secular world may be planned in consultation with the Field Education staff.

To be eligible to register for an internship, the student must have completed at least one-half of his or her degree program and be registered as a student in good standing in the Divinity School. Application forms and processing for internships will be done through the Office of Field Education.

Students Serving As Pastors

Students frequently serve as pastors of churches, or part-time associates, during the period of their study in the Divinity School. These appointments are made by the appropriate denominational official or body. The Divinity School recognizes this arrangement and recommends that the student consult with the Office of Field Education, as agent of the Dean, before accepting an appointment as pastor or associate pastor.

The Office of Field Education cannot make these appointments. This is within the jurisdiction of denominational authorities, and students should initiate their own arrangements. The Office of Field Education, however, requires a student application for appointment prior to accepting one. The office also provides area church officials with recommendations for students.

Students who serve in these capacities ordinarily may enroll in no more than three courses per semester, thus requiring eight semesters to complete the Master of Divinity degree. Student pastors are not permitted to enroll in summer study of any kind. Relaxation of this regulation requires the permission (on the appropriate form) of the supervising church official, the Field Education staff, and the Associate Dean for Curricular Affairs. Students are strongly and actively discouraged from attempting to commute more than fifty miles one way on a daily basis. Extensive commuting will jeopardize the student's academic program, health, ministry, and family life.

In keeping with the goal of the school to develop professional competence in ministry, students should use their pastoral appointments as learning contexts for field education programs initiated by the school. Special seminars and reflection groups are arranged in consultation with students to advance their professional growth and guide the pastor's learning activity in the parish. Periodic evaluation will be expected in the pastor's parish, if all the conditions outlined for credit are met, and all reports are completed and filed at the appropriate time. If, however, the parish setting proves inadequate for the student's needs for ministerial growth and development, the Field Education staff will convene a review committee consisting of the student's faculty advisor, a member of the Field Education Committee and the Field Education staff to review the student's needs and take appropriate action to assist the student in growth. Examples of such action are: requiring an alternative field experience, or a basic unit of Clinical Pastoral Education, psychological evaluation, personal therapy, etc.

Field Education and Clinical Pastoral Education

Students may use a basic unit of Clinical Pastoral Education successfully completed in an accredited CPE center to fulfill either the first or the second field education require-

ment. To receive field credit the student must present a copy of the supervisor's final evaluation to the Field Education Office. To receive (a maximum of two course units) academic credit, the student must present the Registry a letter from the supervisor indicating the unit was completed successfully and where and when it was completed. For field education purposes, CPE units will not be accepted for credit unless they are completed immediately prior to, or concurrent with, the M. Div. program.

International Programs



A Global Perspective for Duke Divinity School

"It is my hope that Duke will become even better known for its international programs. Indeed, Duke's history, resources, and outstanding faculty suggest to me that it has become our solemn obligation to serve the world community, just as it once was our duty to serve the South."

President H. Keith H. Brodie, inaugural address, September 28, 1985

When Dennis M. Campbell became Dean of the Divinity School in 1983, his first administrative addition was a Committee on International Studies and Programs. "I believe," he wrote, "that the future of theological education must be seen in a global perspective and that persons preparing for ministry must encounter the reality of Christianity in the context of our whole world."

Since that time, there has been a gradual expansion of opportunities for study or travel abroad, a slow but steady growth in the number of international students in the Divinity School, and an increase in faculty participation in programs outside of the United States. Some of these are listed below. The faculty and administration of the Divinity School stand ready and eager to assist with any proposals for a broadening of theological studies in the international realm.

The Home Country. Duke Divinity School continues to attract students from other countries who make a significant contribution to the community. In both 1984-85 and 1985-86 there were eight international students representing six different countries. In 1986-87 there were ten from seven countries, in addition to two graduate scholars from abroad. In 1987-88 the number of international students remained constant, while the number of graduate students and international visiting scholars more than doubled. Because of financial limitations and the maturation of higher theological institutions in other parts of the world, a majority of these students come for a shorter period of time and for advanced degrees.

Furthermore, the Lecture Program Committee brings a succession of distinguished scholars and church leaders to speak in the Divinity School. Among these have been the following:

Fall, 1985

Professor R. Neville Richardson, Department of Religious Studies, University of Natal, South Africa.

The Reverend Mr. Helmut Nausner, Superintendent, United Methodist Church, Austria.

Sister Henry Keane, Department of Systematic Theology and Theological Ethics, University of South Africa.

Dr. Robert Morgan, New Testament, Oxford University.

Spring, 1986

Dr. David Lin, Fujian Teachers' University, China.

Fall, 1986

Professor Hans Norbert-Janowski, editor-in-chief, *Evangelische Kommentare*, Stuttgart, Germany.

Professor James D. G. Dunn, University of Durham, England.

Professor Kosuke Koyama, Union Theological Seminary, New York.

Professor Oliver O. Donovan, Oxford University, England.

Spring, 1987

Professor David J. Busch, Dean of the Theological Faculty, University of South Africa, Pretoria.

Fall, 1987

Mr. Ray Plankey, Cuernavaca Center for International Dialogue on Development, Cuernavaca, Mexico.

Professor Lothar Schreiner, Kirchliche Hochschule, Wuppertal, Germany.

Professor Martin Hengel, University of Tübingen, Germany.

The Reverend Mr. Peter Storey, South African Council of Churches, South Africa.

Professor Jens Glebe-Møller, University of Copenhagen, Denmark.

Bishop Anthony of Stavropol, Russian Orthodox Church, Union of Soviet Socialist Republics.

The Reverend Mr. Valter Mitskevitch, All-Union Council of Evangelical Christians/Baptists, Moscow, Union of Soviet Socialist Republics.

Spring, 1988

The Reverend Mr. Finley McDonald, Glasgow, Scotland.

The Reverend Mr. Nathan Goto, African Council of Churches, Liberia.

In addition to courses in world Christianity (including the "Christian World Mission," "Third World Theology," and "Dialogue with Other Faiths"), and courses in the history of religion under the graduate program, various other departments offer courses related to international studies: "War in the Christian Tradition," "Ethics in World Religions," "Marxist Ideology and Christian Faith," "Food and Hunger," among others. Professors Geoffrey Wainwright from Great Britain and Teresa Berger from Germany add an international and ecumenical flavor to the faculty.

Travel Seminars. For a number of years, under the supervision of the Center for Continuing Education, faculty members have led travel seminars to study the role of the Christian church in significant areas of social and cultural development. Each year Professor McMurtry Richey (retired 1984) conducts groups of seminary students, faculty, and ministers to Mexico, generally during the spring recess. In alternate years (most recently in 1987) Professor Creighton Lacy has led a group to visit historic sites and the resurgent church in the People's Republic of China. In 1985 Professor Moody Smith conducted a seminar called "Cities of the First Christians: Athens, Corinth, Ephesus, Rome"; and other faculty members have led tours on their own initiative. Similar opportunities will be continued, and in some cases, the Center for Continuing Education has been able to provide limited financial assistance. As one example of a recent experience, three Duke students were selected by the United Methodist Council of Bishops and the Board of Global Ministries to participate in an interseminary visit to mission, refugee, and development projects in Kenya, Pakistan, and India. This winter, two Duke students participated in a similar travel seminar, this time to study the role of the Church in Latin America.

Study Abroad. At the present time the only regular, on-going program of study abroad is an exchange with the University of Bonn, West Germany. Each year one German student is enrolled for a year at Duke, while an American student is selected to study

in Bonn. This program, carried on for many years under the direction of Professor Frederick Herzog, has been augmented by faculty seminars: in Germany in May, 1983 on the theme of "Luther's Understanding of Human Nature and Its Significance for Contemporary Theology," with a follow-up at Duke in March, 1985, focusing on North American anthropology and Reinhold Niebuhr.

Duke University is one of the supporting members of the American Schools of Oriental Research. Accordingly, students and faculty in the Divinity School have the privilege of attending the Albright Institute of Oriental Research in Jerusalem, the American Center of Oriental Research in Amman, and other similar institutions without charge for tuition. They may also compete for the four fellowships offered annually by the schools.

Individual students from time to time have made private arrangements for study abroad. These have most often taken place in England or Scotland, with academic credit usually transferrable toward the Duke degree. Other invitations have been extended from such widely-scattered institutions as Wesley College, Bristol, England; Trinity Theological College, Singapore; United Theological College, Bangalore, South India; and the School of Theology, Sao Paulo, Brazil. The International Studies Committee will assist with contacts and information for individual proposals.

Foreign Service. The involvement of Duke Divinity School with international institutions and cultures has always gone beyond one-way educational opportunities. Over the years faculty, alumni, and students have lived and worked in locations abroad, under both ecclesiastical and secular auspices. The latest listings include approximately a score of seminary graduates in ministry overseas, and an equal number of other Duke alumni, largely from the Ph.D. program in religion, who are serving in church-related posts. Nearly forty international students have departed to their own—or other—countries to carry on Christian ministry.

Divinity students often participate in international service projects on a short-term basis. Several have taken part in evangelistic or building work-teams, chiefly in the Caribbean area. At least one recently spent a summer in Japan holding youth services under the auspices of OMS International. Faculty, too, are engaged in a variety of activities outside the United States. In addition to innumerable conferences and lectures in Canada and Europe, professors have taught and given papers in Third World countries: e.g., Professors Lacy, Shockley, and Via at the University of Zimbabwe; Professor Langford in Singapore; Professor Westerhoff in Japan, Australia, Argentina, Peru, and other countries of Central and South America; and Professor Wainwright in Australia and New Zealand.

Our World Parish. "The world is my parish," said John Wesley, referring to various classes and social groups in his own country as well as the foreign mission field. Today that "foreign mission field" has become an international Christian community with much to share. Today there are fewer North American missionaries serving in other countries or in ethnic minority parishes, though there is still a need for fellowship and support. In a wider sense "the world is my parish" for every Christian minister and lay person. Duke Divinity School seeks to broaden that awareness through its wide range of international studies and programs.

Black Church Affairs



The Office of Black Church Affairs

The Office of Black Church Affairs has two principal objectives: (1) to assist black and other minority students in deriving the greatest possible value from theological education; and (2) to call the entire Divinity School community to serious and realistic dialogue with the black community. In keeping with these objectives, the Office of Black Church Affairs provides the following programs, activities, and services:

Academic Study. American theological education has long ignored the contributions of the black religious experience, a circumstance which the Divinity School curriculum addresses through (1) black-oriented course offerings in the core curriculum and (2) the integration of black material in the content of all other courses.

Preaching and Lecture Series. Fall and spring preaching and lecture series provide frequent opportunities to hear outstanding black preachers in Divinity School classes and worship services. The Gardner C. Taylor Preaching Series brings outstanding black preachers to the campus.

The Martin Luther King, Jr. Lecture Series brings to the Divinity School community lecturers of national stature to address the issues of justice, peace, and liberation in relation to the insights of the gospel and the black religious experience.

Continuing Education. In cooperation with the Center for Continuing Education, the Office of Black Church Affairs provides several programs for black pastors in the region, including the Gardner C. Taylor Black Preaching Series, the Martin Luther King, Jr. Lecture Series, and seminars on black concerns and issues. Occasional conferences, colloquies, symposia, and the Annual Convocation and Pastors' School supplement these offerings.

There are opportunities for academic study for all qualified black pastors and lay persons. The extensive holdings of the Divinity School Library and the services of the Henry Harrison Jordan Loan Library are also available upon application to the librarian of the Divinity School.

Church Relationships. Through the Office of Black Church Affairs the Divinity School reaches out to the black churches in the Durham-Raleigh vicinity. Such relationships not only afford excellent field settings for ministerial study and work, but they also provide a laboratory in which both blacks and whites together can gain wider knowledge of, deeper appreciation for, and increased sensitivity to the issues and urgencies of black culture.



The Office of Black Church Affairs also acts as a liaison with several clergy and community groups including the Interdenominational Ministerial Alliance and the Durham Ministerial Association.

The Office of Black Church Affairs provides counsel and advice to prospective black seminarians in undergraduate schools and encourages inquiries concerning study opportunities available at Duke Divinity School. For further information, contact Grant S. Shockley, Office of the Director of Black Church Affairs, Duke Divinity School, Durham, North Carolina 27706.

Continuing Education



The Center for Continuing Education

Through the Center for Continuing Education the Divinity School offers extensive opportunities in education for the church's ministry. The Charles P. Bowles Continuing Education Center in the new wing of the Divinity School includes seminar rooms and spacious study carrels for clergy involved in individual study or residential seminars. The Divinity School provides a year-round program of residential seminars and conferences, extension seminars and consultations, and special services to clergy and churches throughout the nation.

Admission and Scholarships

Conferences, churches, and other supporting groups and institutions have made available through the Divinity School designated funds to assist in continuing education for ministry. Inquiries, applications for admission, and requests for continuing education scholarships for residential seminars should be directed to: The Reverend W. Joseph Mann, Director of Continuing Education, The Divinity School, Duke University, Durham, North Carolina 27706 (919)684-3041.

In-Residence Seminars and Conferences

During the academic year 1987-88 the Divinity School conducted a series of continuing education seminars, workshops, and conferences for clergy. Some of these were: "Duke Reading Week;" "Theological Foundations for Ordained Ministry;" "Spiritual Formation and Christian Leadership;" and "Spirituality and the Arts." In addition, special seminars were presented for many districts from the Western North Carolina Conference and the North Carolina Conference of the United Methodist Church. Duke will also help arrange continuing education seminars in other Annual Conferences. Current seminar schedules can be obtained through the Director of Continuing Education.

International Travel-Study Seminars

The Center for Continuing Education sponsored an international travel-study seminar in 1988. "An Introduction to Mexico" was led by Dr. McMurry Richey and gave participants an opportunity to appreciate the peoples and churches of Mexico. The Center for Continuing Education intends to offer clergy more opportunities for international travel and understanding.



Extended Study Leave Program for Clergy

Duke receives requests from clergy from all over the country to spend either a few days or a few weeks at Duke. Some merely want to spend time in the library. Some want to meet with specific professors, getting from them direction for their reading or study and reflection on their thinking. Others have a particular topic or subject they wish to pursue and want the Director of Continuing Education to point them to books, seminars, or professors that might help them. Duke is happy to receive clergy for a study leave under the following guidelines:

- (1) The pastor submits a short biographical sketch and a study proposal.
- (2) The Director of Continuing Education assesses the appropriateness of the proposal—for the pastor and for Duke. Special attention is given to the pastor's ability to do independent work. We also determine whether Duke can provide the guidance that a pastor needs. When a pastor is granted permission to come to Duke on a study leave, the Director of Continuing Education supervises the study.
- (3) CEU's are awarded after a discussion with the Director of Continuing Education and a report from the pastor.

Visiting Scholars Program

The Center for Continuing Education provides carrel space and library privileges for scholars who wish to spend an extended time at Duke while on sabbatical leave. Those interested in this program should contact the Director of Continuing Education.

Duke Summer Institute

The Duke Summer Institute provides an exciting format for continuing education. Usually held the last week in July, the Summer Institute offers persons a choice of continuing education seminars, lectures in the evening, worship, and recreational opportunities at Duke. In the 1988 Summer Institute continuing education seminar teachers included William Willimon, Stanley Hauerwas, Stephen Shoemaker, and Pat Arnold. Several clergy have found the Duke Summer Institute a good way to combine continuing education with family vacation or travel. Inquiries about the current Duke Summer Institute can be made to the Office for Continuing Education.

The Convocation and Pastors' School

The annual Divinity School Convocation and North Carolina Pastors' School, a cooperative endeavor with the North Carolina and Western North Carolina Conferences of the United Methodist Church through the Board of Managers of the Pastors' School, brings together ministers, laypersons, students, and faculty for a series of lectures, sermons, and courses, along with alumni reunions and social occasions.

The James A. Gray Lectures. These annual lectures, established in 1950 as part of a bequest made in 1947 by James A. Gray of Winston-Salem, North Carolina, are delivered in the context of the Divinity School Convocation and North Carolina Pastors' School. The 1987 Gray Lecturer was William May from Southern Methodist University.

The Franklin S. Hickman Lecture. This lectureship was established in 1966 as part of a bequest by Mrs. Franklin S. Hickman in memory of her late husband, Dr. Franklin Simpson Hickman, Professor of Psychology of Religion, Duke Divinity School, and Dean of the Chapel, Duke University. This lectureship enables the Divinity School to bring practicing ministers of extraordinary qualities to lecture and preach in the Convocation and Pastors' School and to participate in Divinity School classes, worship, and informal sessions with students and faculty. The 1987 Hickman lecturer was Peter Storey from South Africa.

Ministry in the Vicinity

Ministers and churches in the vicinity of Duke University are especially welcome to avail themselves of continuing education programs, facilities, and other services of the Divinity School and its faculty and students. They are invited to attend public lectures, visit with distinguished lecturers, participate in in-residence seminars and conferences, audit selected courses, study in the continuing education carrels, and use the resources of the Divinity School Library, the Henry Harrison Jordan Loan Library, and the tape recordings collection. Divinity School faculty, staff, and students are generally available for preaching, teaching, and other services in churches of the community and region.

Additional Study Opportunities



Dr. Mary McClintock Fulkerson

The J. M. Ormond Center for Research, Planning, and Development

This center was established in memory of the late Dr. J. M. Ormond, Professor of Practical Theology of the Duke Divinity School and Director of the Rural Church Program under the Duke Endowment, 1923-48. The North Carolina Annual Conference established the J. M. Ormond Fund in 1951 as part of the special effort of the North Carolina and the Western North Carolina Conferences of the United Methodist Church to provide additional programs at the Divinity School. The center is directed by Dr. Robert L. Wilson, Professor of Church and Society. It is jointly supported by the Ormond Fund and the Rural Church section of the Duke Endowment.

The center has three purposes. First, it assists the Church in its ministry by providing research and planning services. Second, it provides training for ministerial students in church and community studies. Third, it contributes through basic research to the understanding of the nature and functioning of the Church. Emphasis is given to research and planning studies of rural United Methodist Churches in North Carolina.

Programs in Pastoral Psychology

Programs in pastoral psychology beyond the studies incorporated in the M.Div. curriculum are provided in cooperation with the Duke University Medical Center. Two such programs are available.

1. The Master of Theology degree with a major in pastoral psychology is ordinarily a calendar year program beginning the first full week in June. However, upon the recommendation of the staff, candidates with a quarter or more of Clinical Pastoral Education may begin their program in September. The candidate may plan one of two programs or concentrations:
(a.) a concentration in pastoral theology relating psychology and theological understanding to professional ministry, especially the parish, through course work and supervised field or clinical experience; and (b.) a concentration in pastoral care and an introduction to the field of pastoral counseling through course work and an intern year in Clinical Pastoral Education.

A quarter of Clinical Pastoral Education is considered a prerequisite for all programs. Students who wish to complete the intern year in CPE and earn a Master of Theology degree will normally need two years to complete the program.



In the context of clinical pastoral education various professional goals may be sought including general understanding and skills in pastoral care and specialization in pastoral counseling and clinical supervision. Persons specializing in pastoral counseling and pastoral psychotherapy will advance toward certification with the American Association of Pastoral Counselors and the American Association of Marriage and Family Therapists.

2. Single units of basic clinical pastoral education are offered each summer (beginning the first Monday in June and running for eleven weeks) and concurrent with the fall and spring semesters in the Medical Center. Single units of basic parish-based clinical pastoral education are available concurrent with the fall and spring semesters. When the unit is completed within one semester, the student may take two other courses in the regular M.Div. program. Two transfer course credits will be granted for a summer CPE quarter or two course credits will be granted for the unit taken during the academic year (unless a course credit has already been granted for PP 77, in which case only one additional credit will be given for the CPE unit).

Students in CPE may not have other field education appointments or employment. However, a CPE unit will, when satisfactorily completed, count as one field education unit if taken in relation to either Field Education Seminar I or II. Only one field education requirement may be fulfilled by CPE.

Students are reminded that ordinarily no more than five courses out of twenty-four for the M.Div. degree should be taken in any one subdivision.

3. A one-year certificate or nondegree internship program in clinical pastoral education is available through the Duke Medical Center for persons who hold the Master of Divinity degree or its equivalent. Also, students who wish to pursue a pregraduation intern year are invited to apply, provided they have completed at least one year of theological education. The certificate, nondegree intern year can be done at any level of clinical pastoral education (basic, advanced, supervisory) which the candidate and the supervisory staff judge appropriate. These persons may enroll in the Divinity School as Special Students for a course or two each semester. Such training usually provides four units of certified clinical pastoral education credit.

Admission to either the basic unit or the internship program of Clinical Pastoral Education is distinct from admission to the Divinity School. Applications for CPE enrollment are available in the Chaplains Service Office, Duke Medical Center.

For further information concerning any of these programs, write to Director, Programs in Pastoral Psychology, Duke Divinity School. See the section on the Master of Theology degree program.

Women's Studies at Duke University

Graduate students enrolled in any of the University's departments and professional schools participate in the Women's Studies Program by taking graduate level courses, working with Women's Studies faculty on independent research, pursuing the graduate certificate in Women's Studies, and writing masters and doctoral theses in feminist scholarship.

To qualify for a graduate certificate, students must pass a minimum of three graduate level courses on women and gender. IDC 211, History of Feminist Thought, is the core course for the certificate, and the only required one. Students choose the second and third courses, as suited to their interests and programs of study; these may include Divinity courses: CT 214, Feminist Theology, CT 139, Women, Theology and the Church, PP 180, Pastoral Care and Women, and PR 282, Women and the Word; as well as two other IDC courses: IDC 283, Feminist Theory and the and the Humanities and IDC 284, Feminist Theory and the Social Sciences. (Divinity students may elect IDC 211 as one of their two permitted cognate courses [see below for "Cognate Courses"], and may wish to expend the other cognate opportunity on IDC 283 or 284.)

In addition to coursework, graduate students interested in feminist scholarship are strongly encouraged to take advantage of the many co-curricular and professional opportunities the Women's Studies Program presents.

(For relation of this opportunity to requirements of the several degree programs, see below. Note especially the "Required Limited Elective" in Theologies in Context which is part of the M.Div. degree.)

The Ministerial Course of Study School

In cooperation with the Division of Ordained Ministry of the Board of Higher Education and Ministry and the Southeastern Jurisdictional Conference of the United Methodist Church, the Divinity School hosts the Course of Study School for local pastors of the United Methodist Church. This school is in session for four weeks each summer, and the required studies for one full year can be completed in this period. This is not a part of the regular work of the Divinity School degree program, and no credit toward a seminary degree can be earned. The faculty includes representatives from the Divinity School and other church-related institutions. The fortieth session of the Course of Study School is being held 27 June-22 July 1988. For further information on the Course of Study School write to Dr. Paula E. Gilbert, Director, Ministerial Course of Study School, Duke Divinity School, Durham, North Carolina 27706.

Curriculum



Degree Programs

The academic work of the Divinity School presently embraces four degree programs: the Master of Divinity degree (M.Div.) ordinarily of three academic years; a one-year program beyond the basic degree, the Master of Theology (Th.M.); and two programs of two academic years, one leading to the degree of Master of Religious Education (M.R.E.) and the other to the degree of Master of Theological Studies (M.T.S.). The first three are graduate-professional degrees; the M.T.S., inaugurated only in September of 1987, is a general academic degree. Admission to candidacy for any of these degrees presupposes the completion of the A.B. or its equivalent.

Students preparing for ordination to the Christian ministry and requiring appropriate graduate-professional education will enroll for the Master of Divinity degree. Students whose acquired academic standing, under this basic degree program, entitles them to further specialized study may advance their command of selected theological disciplines by applying for an additional year of studies leading to the Master of Theology degree. Together, these two degree programs constitute a sequence. Although the Master of Divinity degree fulfills requirements for ordination by prevailing ecclesiastical standards, the Th.M. program may assist in assuring a larger measure of professional preparation. Application for admission to the Th.M. program is open to graduates of other schools who have completed the basic theological degree.

The Master of Religious Education degree program is designed to prepare qualified persons, ordinarily not seeking ordination, for a ministry of Christian education in local churches or other organizations. The course of study is arranged to provide grounding in biblical, historical, and theological disciplines as essential background for instruction in and exercise of professional competence in curricular planning, teaching methods, and supervision of educational programs for various age groups. The M.T.S. provides an introduction to the theological disciplines as foundation for a graduate research degree (Ph.D); preparation for lay religious degrees other than Christian education; grounding for teaching, research or practice in another field (e.g., history, psychology, music); enhancement of institutional roles; and personal enrichment.

The specific requirements for each of these degrees are found in the succeeding pages. Completed course work cannot be credited toward more than one degree. Reciprocal transfer of credit for course work taken under the M.Div., M.R.E., or M.T.S. programs requires the permission of the Associate Dean for Academic Programs.

Doctoral Studies Accredited by the Graduate School

The Divinity School provides a substantial body of course offerings to an advanced level in biblical, historical, and systematic and contemporary theological disciplines that are accredited by the Graduate School and the faculty of the Divinity School, and lead to the Doctor of Philosophy degree. Sharing responsibility with the University Department of Religion for staffing and curricular provisions of this course of study, the Divinity School is the principal contributor to the program of graduate studies in religion. However, since the Ph.D. in religion is certified and awarded under the Graduate School, the doctoral student's admission and matriculation are administered under that division of Duke University.

With few exceptions, most courses in the *Bulletin of Duke University: The Divinity School* carrying a 200 number or above and belonging to the fields noted above are applicable to doctoral programs of study. These courses are open to qualified M.Div., Th.M., M.R.E., or M.T.S. students by permission of the instructor.

Qualified persons who desire to pursue studies leading to the degree of M.A. or Ph.D. in religion, under the administration of the Graduate School, are advised to apply to the Dean of that school. Inquiries concerning fellowships or specific requirements of the Program of Graduate Studies in Religion may be addressed to the Director, 209 Divinity School.

Administration of the Curriculum

Students are required at the time of each registration period to plan their course of study with the consultation and approval of their assigned faculty advisers. Such programs are subject to the review and approval of the Committee on Academic Standing, the Dean, and the Associate Dean for Academic Programs. It is the responsibility of each student to see that all requirements for graduation (and for ecclesiastical ordination) are met, and that any special permission granted to deviate from the normal program is properly recorded on the personal files in the registry.

Grading System. The Divinity School employs the grading scale with the following letters, *A, B, C, D*, and *F* which have been defined as follows: *A*, excellent; *B*, good; *C*, satisfactory; *D*, passing; *F*, failure; *WI*, withdrew illness; *W*, withdrew, discretion of the Dean; *I*, incomplete; *P*, passed; *NC*, noncredit; *Z*, year course. At the discretion of the instructor, individuals or classes may in certain instances be graded simply as pass or fail. Such *P/F* grades shall be limited to no more than 25 percent of a student's total curriculum at Duke and will not be figured in the grade point average.

The denotations are defined as follows according to quality points: *A*, 4; *A-*, 3.7; *B+*, 3.3; *B*, 3.0; *B-*, 2.7; *C+*, 2.3; *C*, 2.0; *C-*, 1.7; *D+*, 1.3; *D*, 1.0.

Limited Program. Students whose work after admission is not satisfactory may be placed on limited programs by the Academic Standing Committee and are required to reduce their course loads or to make other academic adjustments. Students who during the first year of Divinity School maintain less than a *C* (2.0) average, including failures, ordinarily will be required to withdraw from the school.

Incompletes. A student may petition the Associate Dean for Academic Programs to receive a grade of incomplete in a course. This petition must be filed in writing on the prescribed form with the registry on or before the last official day of classes of the semester in question. Such permission may be granted when a student, through some circumstances beyond control, such as illness, has been hindered from meeting the course requirements. Adjudication of the petition will rest with the Associate Dean and the instructor concerned. The Associate Dean will communicate in writing to the student regarding the joint decision and any conditions attached thereto. An incomplete becomes an *F* unless it is removed through completion of assigned work by the following dates:

for incompletes incurred in fall semester courses, 1 February; for incompletes incurred in spring semester courses, 1 September.

Change of Courses or Withdrawal. Students are permitted to change their course registrations, without incurring a penalty, during the prescribed drop/add period at the beginning of each semester. Any alteration in the number of courses must be officially reported and recorded. The adding of a course requires the permission of the instructor of that course as well as the student's faculty adviser. Any refund of tuition related to withdrawals will be according to the published schedule.

No student will be permitted to withdraw from a course after one-half of the semester without incurring failure, except for causes adjudged by the Associate Dean for Academic Programs to be beyond the student's control. Conditions of genuine emergency and not considerations of convenience will be determinative in considering requests, which must be submitted in writing on academic petition forms.

Leave of Absence. A student wishing to take a leave of absence for one or two semesters, and intending to return to a degree program in the Divinity School, should so notify the Associate Dean for Academic Programs in writing in advance. No leave of absence will be granted for more than one full academic year, although an emergency extension may be requested from the Associate Dean for Academic Programs.

Withdrawals from School. Students deciding to withdraw from the Divinity School, for whatever reason, should consult with their faculty advisers and the Associate Dean for Academic Programs, and must file a written statement of withdrawal prior to departure. All students who have officially withdrawn or whose leave of absence extends beyond one academic year but who wish later to return to the Divinity School will be required to reapply for admission, and provide whatever documentation is required by the Director of Admissions.

Directed Study. Students may, with permission of their faculty advisers and the instructors involved, take one or two units of Directed Study, preferably not in the same semester. These independent study courses under individual faculty supervision are ordinarily in subjects at an advanced level which cover material not available in the regular curriculum. Students wishing to take more than two courses by Directed Study must have permission from the Associate Dean for Academic Programs in consultation with the student's faculty adviser and the instructor who agrees to direct that study.

Cognate Courses. Students may, in consultation with their faculty advisers, take up to two graduate level courses in other departments of Duke University or at the University of North Carolina. Permission for more than two such cognate courses must be secured from the Associate Dean for Academic Programs. Courses in the Duke Department of Religion do not count within this limit.

Graduation with Distinction. Students who achieve a grade point average of 3.85 for overall academic records in the M.Div. and M.R.E. programs are granted the degree *summa cum laude*. Students with a grade point average of 3.65 or above are awarded their degrees, *magna cum laude*. Such distinction is calculated on the basis of letter grades only, totaling at least three-quarters of all courses taken at Duke, and will be indicated on the student's diploma.

Part-Time Students. Students taking less than three courses in any given semester are considered part-time students and are ineligible for financial aid from the school.

Auditors. Full-time students paying for at least three courses are permitted to audit additional courses, if space permits, with the approval of their advisers, the Associate Dean for Academic Programs, and the instructor of the class. Special students, part-time students, or persons not candidates for degrees in the University are charged an audit fee for each such course.

The Basic Theological Degree—Master of Divinity

The faculty of the Divinity School views the curriculum as dynamic, not static; constantly endeavors to review the curriculum as a whole and to tailor individual courses to meet the needs of a rapidly changing world; and periodically commits itself to overall curricular change. Major curricular revisions were instituted in 1948, 1959, and 1967. Another such revision took effect in September of 1987.

This degree program is structured to elicit a positive response to: (1) the challenge to provide an adequate professional education—education for ministry; (2) the needed variability of ministries in today's complex world; (3) the norms of university education; and (4) the Christian tradition.

Aims of the Curriculum. The aims of the basic degree program focus upon four goals, four areas of personal and curricular responsibility, four lifelong tasks which should be strongly advanced during the seminary years.

1. *The Christian Tradition.* To acquire a basic understanding of the biblical, historical, and theological heritage.
2. *Self-Understanding.* To progress in personal and professional maturity—personal identity, life-style as an instrument of ministry, major drives, handling of conflict, resources, and professional competency and so forth. This is to be coupled with a sensitivity to the world in which we minister—its social forces, its power structures, its potential for humanization and dehumanization.
3. *Thinking Theologically.* To have the ability to reflect about major theological and social issues and to define current issues in theological terms and theological issues in contemporary secular terms.
4. *Ministering-in-Context.* To have the ability to conceptualize and participate effectively in some form of contemporary ministry.

Goals of such scope cannot be neatly programmed in any curriculum, and the degree of achievement (in seminary and beyond) will vary with individuals and their own motives and incentives.

The Basic Curriculum—General Description. Graduation requirements for the Master of Divinity degree consist of satisfactory completion of twenty-four courses, with an overall grade point average of C (2.0) or better; ten basic courses or their equivalent; three limited electives; two units of approved field education; and two evaluations.

The basic curriculum provides for foundational courses in biblical, historical, theological, and ministerial studies, representative of the tradition and regarded as indispensable background for subsequent elective work and individual program information. These required courses total ten of the twenty-four courses necessary for graduation. They are Old Testament 11, New Testament 18, Church History 13 and 14, American Christianity 28, Christian Theology 32, Christian Ethics 33, Preaching 30, Church's Ministry 10 and 100. At least one course must be elected from three designated lists of offerings (available at registration) in advanced Biblical Studies, Black Church Studies, and Theologies in Context (the latter covers such fields as Women's Studies, World Christianity, and Liberation Theology). The opportunity of advanced standing adds further variability to the academic program, depending upon the nature and quality of the student's undergraduate academic work. Fourteen courses, over half of the required total, are available for working out an individualized program of studies leading to specialized preparation in academic depth and for purposes of professional ministerial competence.

Required courses may be staffed by one or more professors and are planned to treat subject matter both in scope and depth at the graduate level.

The formulation of the student's course of studies is guided by certain broad but normative recommendations for area distribution of courses and by the advice and counsel of appointed faculty advisers or authorized directors.

Students and advisers are directed to read diligently the paragraphs on elective studies and professional aims and distribution of elective studies in the section on administration of the curriculum.

All academic programs are subject to review and emendation by the Dean and the Associate Dean for Academic Programs for the fulfillment of the aims of the curriculum. The declared vocational and professional objective of the student is of central importance both to the student and to the faculty adviser in planning the student's comprehensive study program.

Six semesters of residential study are ordinarily required for the completion of the degree. With permission of the Associate Dean for Academic Programs, certified non-residential study, not exceeding the equivalent of eight courses, may be permitted to a candidate for the basic degree.

The normal academic load is four courses per semester. A student with demonstrated competence may, with the consent of the academic adviser and the Associate Dean for Academic Programs, enroll for an additional course in the middler and senior years.

General Features of the Basic Curriculum. The following is a brief summary of the basic curriculum.

1. Twenty-four courses and six or more semesters of residency are required for graduation.
2. Each student is required to complete two approved assignments in field education (with or without remuneration) under supervision.

Such assignments might include an internship, a summer of full-time work, two semesters of part-time work, or involvement in church or community service. The essential criteria for graduation credits are that the amount and quality of supervision be approved by the Office of Field Education, and that the student be required to evaluate and correlate the experience directly.

3. A normal academic load is four courses with credit.

Admission to candidacy for the Master of Divinity degree is admission to the regular program of studies. The suggested paradigm defines the normal sequence of the student's developing program. Students enrolled for less than three courses are considered part-time and are not eligible for financial aid or student health services.

The curriculum intends to serve graduate-professional aims with maximum flexibility. Fourteen elective courses are available and may be programmed to satisfy vocational and professional preferences. In planning a course of study, the student, in consultation with the adviser, should choose a program which will give a broad understanding and appreciation of future professional responsibilities. Members of the faculty and staff welcome inquiries.

Professional ministries include those of the parish, preaching, teaching, and pastoral care; ministries of education in local churches and higher education; missions; campus ministry; specialized urban and rural ministries; chaplaincies—hospital, institutional, industrial, and military; teaching; religious journalism; audiovisual communications; church agencies; and ecumenical ministries at home and abroad. For many of these, further specialized training will necessarily be sought elsewhere beyond the basic degree. For all of these ministries the student's program of studies can be shaped for the particular ministry in view.

Students are encouraged to elect at least one course in each of the following areas or subdivisions of the curriculum beyond the required courses: American Christianity; history of religion; Christian education; world Christianity and ecumenics; biblical exegesis; pastoral psychology; Christian ethics; worship and preaching; care of the parish (including church and community). Such advanced courses should be selected with a view to the individual's vocational and professional aims and in consultation with the student's faculty adviser. Students are also encouraged to concentrate, usually in not more than five courses in any one subdivision of the curriculum, in an area directly related

to their vocational and professional intention. The program of each student is subject to review and revision by action of the faculty adviser, the Committee on Academic Standing, the Associate Dean for Academic Programs, or the Dean.

Evaluation/Self-evaluation. The successful completion of the new M.Div. program rests upon three components: (1) grades; (2) field education; (3) faculty evaluation. Two points of evaluation/self-evaluation occur. One, after the first semester, provides an early reading on the student's sense of vocation and the appropriateness of the Duke M. Div. program for that person; gives early direction to the student's academic program; provides guidance for the first field assignment.

The second, normally after the fourth semester, reviews the student's progress to date in classroom and field learning and assesses the student's readiness to proceed into the senior year and complete the Master of Divinity program. Specifically examined are the student's (1) understanding of his/her Christian vocation, (2) self-perception as person in ministry, (3) command of skills of ministry, and (4) ability to integrate practice and theology of ministry.

The instruments to be used include (1) a self-evaluation document; (2) field education data and transcript; (3) a 15-20 page typewritten paper on the student's emerging theology of ministry in relation to his/her given faith heritage; (4) an episode of ministry such as a verbatim, a sermon, a case study, a church program, etc., which demonstrates the theology of ministry; and (5) a 45 minute oral exam over the paper, specific episode, etc.

The evaluation is a graduation requirement which must be satisfied as any other requirement. Students who require significant additional work as judged by the evaluating committee will have to complete that work prior to graduation.

Information from the evaluation is protected by the statutes concerning privacy and confidentiality. It will not be shared by the Divinity School with any extra-University party except upon written release of the student and then only in summary fashion.

A SUGGESTED M.DIV. CURRICULAR PARADIGM

Junior Year

Fall Semester

Church's Ministry 10
Church History 13
Old Testament 11
Elective
(Evaluation 1)
Field Education 1

Spring Semester

Christian Theology 32
Church History 14
New Testament 18
Elective

Middler Year

Fall Semester

Christian Ethics 33
Preaching 30* (or Elective)
American Christianity 28
Elective
Field Education 2

Spring Semester

Elective
Elective
Elective
Elective
(Evaluation 2)

Senior Year

Fall Semester

Church's Ministry 100
Elective
Elective
Elective

Spring Semester

Elective
Elective
Elective
Elective

*Students will take the Introduction to Preaching course before the end of the fourth semester and after the foundational courses in Old and New Testament or their equivalents.

Required Limited Electives:

One course in Black Church Studies (from designated list)

One course from Theologies in Context (from designated list of courses treating Women's Studies, World Christianity, Liberation Theology)

One additional course in Scripture

The third requirement in Scripture may be met in one of the following ways:

(1) by the course entitled "The Interpretation of Scripture" (OT/NT 150); (2) by the Biblical language sequences OT 115-16 or NT 103-4 (or an advanced language course in which a formal exegetical paper is required); (3) by an English exegesis course in which a formal exegetical paper is required (the courses to be specified in registration materials); (4) by a Greek or Hebrew exegesis course.

Field Education. Two units of approved field education are required; they are represented above as winter term placements (30 weeks); they may also be satisfied in summer placements (10-12 weeks).

Student Pastors. Students in candidacy for the Master of Divinity degree who serve as full-time pastors or work more than fifteen hours per week in addition to their academic schedule are advised that their degree programs will usually require a fourth academic year.

Modification of this schedule requires the approval of the Associate Dean for Academic Programs on recommendation of the Associate Dean for Field Education.

1. Students with pastoral charges or comparable extracurricular responsibilities ordinarily will enroll for not more than three courses.
2. Students who accept pastoral charges in their middler or senior year are required to have the prior approval of the Associate Dean for Field Education. Such students will be required to restrict their course work in accordance with regulation 1 above.
3. Modifications of these regulations will be scrupulously administered. Academic achievement, normally a *B* average, must be demonstrated before any modification of these requirements is allowed. Since adequate indication of the student's academic proficiency is not available before the completion of the first academic year, no modification of regulation 1 is possible for junior students.
4. Students who secure minor employment outside the channels of the Office of Field Education are required to inform the Associate Dean for Field Education. Students carrying an outside employment work load of more than fifteen hours per week will be required to limit their academic load.
5. Ordinarily a student may not commute more than fifty miles (one way). Students living farther away than this will be required to stay in Durham during the academic week.
6. Student assistant pastors (not pastors-in-charge) may enroll for a full academic load if they are not on limited program, if their work is under the supervision of the Associate Dean for Field Education, and if their field duties involve no more than fifteen hours per week.

Study Abroad. Study abroad, with transferable credit toward graduation, may be allowed for a candidate for the Master of Divinity degree by approval of the Associate Dean for Academic Programs. A strong academic record is a prerequisite. Ordinarily, permission for such study may be granted to students who have completed the work of the middler year. Both the institution abroad and a specific course of study proposed must have the prior approval of the Associate Dean for Academic Programs. Required courses and the two field education units must usually be completed at Duke.

Transfer Credits. Transfer of credit to the Divinity School of Duke University, leading to candidacy for the degree of Master of Divinity, will normally be limited to one-

third of the academic credits (in proportional evaluation) required for fulfillment of degree candidacy (see the chapter, "Admissions").

Advanced Placement. Students may, on the basis of undergraduate courses, a religion major, or other substantial preparation, be given advanced placement in one or more of the eight required subjects. Such placement normally presumes at least two college courses in a given area (e.g., Old Testament) with a satisfactory grade average and permits the student to fulfill the requirement by electing an advanced course in the same area (e.g., an advanced Old Testament course in place of Old Testament 11).

Ordination Requirements. Students preparing for ordination are strongly advised to ascertain early in their seminary program the precise ordination requirements of their denomination.

United Methodist students must fulfill educational requirements in the *Discipline*, by completing the year-long course on Methodist doctrine, history, and polity (CP 159 and 160). Most annual conferences also require one or more courses in preaching and worship and/or clinical pastoral education.

Students from other denominations should consult with their appropriate church bodies for specific requirements, which may include biblical languages. Polity courses for certain other denominations may be offered from time to time by faculty members or local clergy on prior request.

Continuation Requirements. The following are the continuation requirements for students enrolled in the M.Div. degree program:

1. The student must maintain a cumulative grade point average of 2.0. If a student falls below this level he or she may be terminated or warned and placed on limited program. This means that the student may enroll in no more than three courses.
2. At the end of the second semester the student on limited program who does not attain a cumulative GPA of 2.0 is terminated. In exceptional cases a student who shows substantial improvement the second semester but does not quite attain a GPA of 2.0 may be given a third semester to do so.
3. The progress of all students is reviewed at the end of every semester by the Academic Standing Committee.

The M.Div degree must be completed within six years (twelve semesters). The minimum time in which a degree can be completed is three years (six semesters).

To be classified as full time, a student must be enrolled in three or more courses in a semester.

M.Div. with a Concentration in Christian Education

Persons wishing a Master of Divinity degree with a concentration in Christian education will complete the stated requirements of the M.Div. curriculum. In addition, they would ordinarily take CED 25 in the first semester of the junior year; CED 132 in the second semester of that year; CED 250, the Senior Symposium in Christian Education, in the second semester of the senior year; and three other Christian education courses. They would also complete one field education unit in a Christian education setting.

The Master of Religious Education Degree

The course of study leading to this degree is designed for persons desiring to prepare for leadership and service in the educational ministry of the church.

Admission. Applications for admission to the Master of Religious Education program are evaluated by the same standards as those applicable to the Master of Divinity degree, and admission requirements and procedures are also the same. Students planning to specialize in Christian education should study the sections of this bulletin which

contain statements of policy regarding the most appropriate prerequisite studies for theological education and the procedures to be followed in applying for admission.

Requirements. The Master of Religious Education degree usually requires two years, or four semesters, of residence and study and the fulfillment of the following requirements:

1. Sixteen courses according to the following curricular paradigm:

First Year

Fall Semester

CED 25: Education as a Pastoral Ministry
Church History 13
Old Testament 11
Elective
(evaluation—1)

Spring Semester

Christian Theology 32
Church History 14
New Testament 18
Elective

Second Year

Fall Semester

Christian Ethics 33
CED 132: Curriculum Teaching and Learning
Elective
Elective
(evaluation—2)

Spring Semester

CED 250: MRE Symposium
Elective
Elective
Elective

Required Limited Electives: Three courses in Christian Education. One unit of approved Field Education is required.

Note: The courses in scripture, history, and theology above are those typically elected. Others in the same divisions may be substituted with the permission of the adviser, the divisional chair and the Associate Dean for Academic Programs.

All MRE students will be involved with their adviser in two evaluation/self-evaluation processes. One, after the first semester, provides an early reading on the student's sense of vocation and direction. The second, normally during the third semester, assesses the student's readiness to complete this professional degree program. The latter includes the submission of a fifteen—twenty page paper entitled "My Emerging Theology of Educational Ministry." Both draw upon insights and data from field education as well as from academic performance.

United Methodist Requirements. This degree meets the academic requirements for consecration as a diaconal minister in the United Methodist Church when United Methodist doctrine and polity (CP 159-60) are taken as electives. To be certified as a Director or Minister of Christian Education by an annual conference, a student would need to take a course in worship, typically CW 178, and United Methodist history, doctrine and polity (CP 159-60), in addition to the courses in Christian Education required for the degree. Students are advised to consult with their Conference Boards of Diaconal Ministry.

Continuation Requirements. The following are the continuation requirements for the MRE degree program:

1. The student must maintain a cumulative grade point average of 2.0. If a student falls below that he or she may be given a second semester to bring the cumulative GPA up to 2.0. Failure to do so results in termination.
2. The progress of all students is reviewed at the end of every semester by the Academic Standing Committee.

The minimum time in which the MRE can be completed is two years (four semesters). The degree must be completed in four years (eight semesters).

To be classified as full time a student must be enrolled in three or more courses.

The Master of Theological Studies Degree

This two-year (four semesters) general academic degree, inaugurated only in September of 1987, is designed to provide an introduction to the theological disciplines as: (1) foundation for a graduate research degree (Ph.D.); (2) preparation for lay religious careers; (3) grounding for teaching, research or practice in another field (e.g., history, psychology, music); (4) enhancement of institutional leadership roles; (5) personal enrichment.

Admissions standards:

1. B.A. (or equivalent) from a regionally accredited college or university;
2. 3.00 overall grade point average (on 4.0 scale);
3. personal program goals commensurate with the M.T.S. program.

Requirements:

1. 16 courses and four or more semesters of residency (at least three semesters of which must be at Duke, i.e., transfer credit is limited to one semester);
2. a normal load of four courses per semester;
3. two courses from each of the Biblical, Historical and Theological divisions (ordinarily those would be the Old and New Testament introductions; the two semester survey of church history; and the basic theology and ethics courses);
4. the maintenance of a cumulative grade point average of 2.5;
5. a paper* submitted within a course in the final (fourth) semester and fulfilling, in part, the requirements of that course which addresses itself to the coherence, learnings, or major emphases of the individual's program (choice of course by mutual consent of student, instructor, advisor);
6. completion of all requirements for the degree within a four year (eight semester) period.

Administration. In consultation with their advisers, students will draft a set of program goals and project a four semester course plan (or an appropriate alternative plan on a part-time basis). At each registration conference, students and advisers will reassess program goals and the course plan adopted by the student. At the end of each semester, the Academic Standing Committee shall review the progress and cumulative grade point average of each student. The M.T.S. program as a whole will be administered by the Associate Dean for Academic Programs who will take responsibility for any colloquia or other special M.T.S. programs.

Persons enrolled for three or more courses would be classified as full time.

Students enrolled in the M.T.S. program could avail themselves of graduate level courses of the University open to Divinity School students and cognate to their programs and offerings of The Divinity School except those courses specific to other degrees, e.g. the Church's Ministry 10 and 100 courses of the M.Div. program and the M.R.E. Colloquium.

United Methodist Requirements. This degree meets the academic requirements for consecration as a diaconal minister in the United Methodist Church when United Methodist doctrine and polity (CP 159-60) are taken as electives. Students are advised to consult with their Conference Boards of Diaconal Ministry.

*Guidelines for the fourth semester paper will be available.

A Suggested M.T.S. Curricular Paradigm

First Year

Fall Semester

Elective
Old Testament
Church History
Elective

Spring Semester

Christian Theology
New Testament
Church History
Elective

Second Year

Fall Semester

Christian Ethics
Elective
Elective
Elective

Spring Semester

Elective**
Elective
Elective
Elective

**One of the electives serves as the context for the summary paper.

The Master of Theology Degree

The course of study leading to the degree of Master of Theology is designed for graduates of accredited theological schools who desire to continue or resume their theological education for enhancement of professional competence in selected areas of study. Enrollment in the Th.M. degree program is open to a limited number of students who have received the M.Div. (or the equivalent) with superior academic records.

Inquiries on admission may be addressed to the Assistant Dean of Admissions for referral to the Director of the Th.M. Program.

General Requirements. The general requirements for the degree of Master of Theology are:

1. Eight course units of advanced studies, with an average grade of *B* (3.0 average on a 4.0 scale).
2. Superior performance in a comprehensive examination covering the major area of study. As an alternative to the comprehensive examination the student may elect to do a research project in one major area if approved by the supervising professor. This project shall carry one course credit, to be counted within the eight units required.
3. Residence for one academic year or the equivalent. (Equivalency to be determined by the Associate Dean for Academic Programs).

There are no general language requirements. However, classical or modern languages may be required for certain programs (for example, in biblical studies, Hebrew or Greek may be required).

The Program of Study. At least four of the required eight courses must be taken in one of the basic theological disciplines (biblical, historical, theological, or ministerial) which shall be designated as the candidate's major, and at least two courses in another discipline (i.e. an area of study distinct from the major) which shall be designated as the candidate's minor. Ordinarily, no more than two units may be taken through directed reading, and no more than one of these in any one semester. In the area of pastoral psychology, up to four course units may be taken through clinical pastoral education.

The comprehensive examination will be given at the close of the course of study for the degree, ordinarily in May or September.

The entire program of studies and comprehensive examination should be completed within twelve months. In some cases, the time limit may be extended, but in no case beyond three years.

The candidate majoring in pastoral psychology may plan one of three programs or concentrations: a concentration in pastoral theology relating psychology and theological understanding to professional ministry, especially the parish, through course work and supervised clinical or field experience; a concentration in pastoral care through course work and an intern year in basic or advanced clinical pastoral education; a concentration in pastoral counseling through course work and supervised counseling experience in a pastoral counseling center. In the context of clinical pastoral education various professional goals may be sought, including general understanding and skills in pastoral care. The Clinical Pastoral Education Program is certified by the Association for Clinical Pastoral Education. Persons specializing in pastoral counseling and pastoral psychotherapy will be moved toward certification with the American Association of Pastoral Counselors and the American Association of Marriage and Family Therapists. Course PP A (or its equivalent) is considered a prerequisite for a major in pastoral psychology. It is not applicable toward the eight courses required for the degree, although it will be indicated on the student's transcript. Accordingly, the student majoring in this area should ordinarily make provision for a program extending for a full calendar year.

Financial Aid. Please note in the pertinent sections of the chapter "Financial Information" that the charges for tuition and general fee for the Th.M. degree are combined and are made on the basis of the number of courses taken, and that in order to be eligible for medical care a student must be taking at least three courses.

Continuation Requirements. The following are the continuation requirements for the Th.M. degree program.

1. The student must maintain a cumulative grade point average of 3.0. A student who falls below this level is terminated.
2. The progress of all students is reviewed at the end of every semester by the Academic Standing Committee.

The Th.M. degree must be completed within three years (six semesters). The minimum time in which the degree can be completed is one year (two semesters).

To be classified as full time a student must be enrolled in three or more courses in a semester.

Duke Summer Session

While the Divinity School does not presently offer a regular summer program, students may enroll for intensive biblical language courses (Hebrew in 1988 and Greek in 1989) or individual directed study. Summer courses of graduate level may also be taken in other departments as cognate credits (maximum of two, see provisions under administration of the curriculum). Permission for such credits must be secured in advance from the instructor and from the Associate Dean for Academic Programs, but official registration and payment of fees are handled in the Office of Summer Educational Programs, 120 Allen Building, Duke University, Durham, North Carolina 27706.

Special Programs

Duke Divinity School is a participant in the National Capital Semester for Seminar-ians conducted by Wesley Theological Seminary in Washington, D.C. Students may, with the approval of the Associate Dean for Academic Programs, enroll in this one-semester program focused on political issues and social ethics, and receive up to four transfer credits. Applicants must have completed at least two and not more than four semesters at Duke to be eligible.

International Study Programs

For several years the Divinity School has been developing programs of international study and exchange involving faculty and students. The main areas in which the development is centered at this time are the following:

Mexico Seminar. Brief intensive travel-study to foster appreciation of Mexico, its people, history, culture, and religion—with special attention to the faith and mission of the church in Latin America today. Direct encounter with Third World poverty. About twelve persons per seminar. Twice annually.

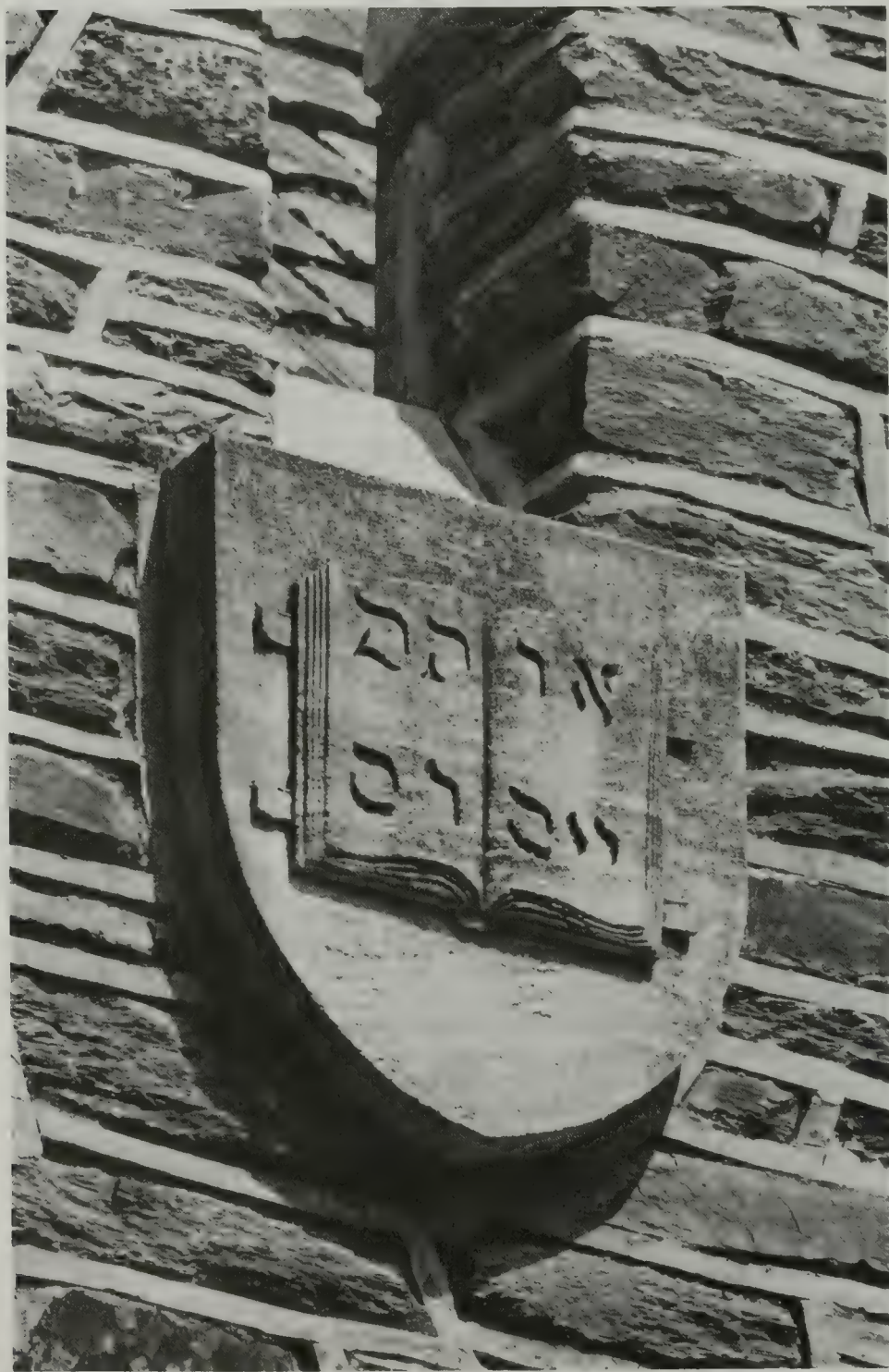
China Seminar. A travel-study seminar on the re-emergence of the Church in China focusing on the unprecedented response to the Church in a Marxist society. Participants have the opportunity also to learn about China and its people and see firsthand the changes taking place in this remarkable country. Biannually.

Robert E. Cushman Exchange Fellowship. Each year faculty and staff nominate a student to represent the Divinity School in the Bonn/Duke Exchange program. At Bonn University (West Germany) the student for a year becomes thoroughly acquainted with another culture and different church life. Full participation in classes at Bonn required. Language preparation necessary.

Dumfries, Scotland. In cooperation with St. Michael's Parish, Dumfries, Scotland, the Divinity School offers an academic year's experience. A modest stipend provides basic support and trans-Atlantic air fare. This opportunity is open each year to one rising senior who serves as a full-time parish assistant for this parish of the Church of Scotland.

A more extensive description of the Divinity School's international programs follows the section on Field Education.

Courses of Instruction



Course Enrollment

The foundational courses typically carry two digit numbers (e.g., New Testament 18, Church History 13, American Christianity 28, Christian Theology 32). Other courses numbered through 199 are elective courses for Divinity School students only. Most courses numbered 200 and above are approved for credit by both the Divinity School and the Graduate School, and require the permission of the instructor. For other prerequisites the student should consult the roster of courses of instruction in this bulletin and should also refer to published registration advices at the time of registration for each semester.

Courses jointly approved by the Divinity School and the Graduate School of Duke University are published in the *Bulletin of Duke University: The Divinity School*. Courses offered in the Department of Religion of Duke University, or as cognate courses in other departments, must be of graduate level (numbered 200 or above) in order to fulfill requirements for degrees in the Divinity School.

Projected Course Offerings

The following list of proposed course offerings for the 1988-9 academic year is tentative and subject to change. Detailed listings are available at the time of preregistration in the middle of the preceding semester, and more distant plans may be ascertained by consulting the divisional representative or the instructors concerned.

Fall Semester, 1988

Old Testament (OT) 11, 115, 106D, 223G
New Testament (NT) 18, 103, 117C, 118, 226E, 257, 309
Church History (CH) 13, 339
Historical Theology (HT) 183
American Christianity (AC) 28,
Christian Theology (CT) 119, 139, 200, 211, 322, 332
Christian Ethics (CHE) 33, 215, 388
World Christianity (WC)
Church's Ministry (CM) 10
Care of the Parish (CP) 50, 159
Christian Education (CED) 22, 25, 102, 108
Church Worship (CW) 178, 180
Pastoral Psychology (PP) 64, 77, 181-A
Preaching (PR) 30, 164, 280, 281

Spring Semester, 1989

Old Testament (OT) 11, 116, 223F

New Testament (NT) 18, 101, 104, 117A, 227D
 Church History (CH) 14, 235, 236
 Historical Theology (HT)
 American Christianity (AC)
 Christian Theology (CT) 32, 118, 221, 279, 328
 Christian Ethics (CHE) 107, 205, 213, 244, 268
 Black Church Studies (BCS) 124
 World Christianity (WC)
 Care of the Parish (CP) 158, 160
 Christian Education (CED) 109, 132, 250
 Christian Worship (CW) 162, 178
 Pastoral Psychology (PP) 181-B
 Preaching (PR) 30, 183, 282

I. Biblical Studies

OLD TESTAMENT

11. Introduction to Old Testament Interpretation. An introduction to the literature, history, and religion of ancient Israel with emphasis upon exegetical methodology. *Bailey and Crenshaw*

101. The Prophetic Movement. A study of the prophetic movement in Israel from the earliest period to the postexilic development of apocalyptic with special reference to the content and religious teaching of the prophetic writings. *Efird*

106. Exegesis of the English Old Testament. Prerequisite: OT 11 or equivalent.

106A. Genesis. *Bailey*

106B. Amos and Hosea. *Bailey*

106D. Wisdom Literature in the Old Testament. *Crenshaw*

106E. Old Testament Psalms. Exegesis of various literary types; theological orientation of Old Testament liturgical prayer; implications for prayer and liturgy today. *Staff*

109. The Religion of the Old Testament. A study of the religious ideas contained in the Old Testament with special reference to their interpretation from Robertson Smith to the present. *Efird*

115—116. Introduction to Biblical Hebrew. Elements of phonology, morphology, and syntax. Exercises in reading and writing Hebrew. Exegetical treatment of the book of Jonah. (Two semesters: no credit will be given for 115 without completion of 116.) *Bailey*

130. Dying and Death. Critical consideration of biblical, legal, medical, and ethical perspectives. Prerequisites: OT 11, NT 18, or equivalents. *Bailey, H. Smith, and others*

150. The Interpretation of Scripture A study of the methods by which modern interpreters seek to understand ancient texts, and of the problems and options involved in the move from text to sermon. Consideration of texts from both Testaments. Evaluation of the Lectionary as a means of interpretation. Prerequisite: OT 11, NT 18. *Bailey, Efird, and others.*

180. From Text to Sermon. (See PR 180.) *Staff*

207. Intermediate Biblical Hebrew I. Historical Hebrew grammar with reading and exegesis of Old Testament prose (Pentateuch and historical books in alternate years). *Wintermute*

208. Intermediate Biblical Hebrew II. Historical Hebrew grammar and rapid reading of prose and poetry. *Meyers*

209. Old Testament Theology. Studies of the Old Testament in regard to theological themes and content. Prerequisite: OT 11 or equivalent. *Staff*

220. Rabbinic Hebrew. An interpretive study of late Hebrew, with reading from the Mishnah. *Staff*

223. Exegesis of the Hebrew Old Testament. Prerequisite OT 115—116.

223A. Amos and Hosea. Stress on hermeneutical method. *Bailey*

223B. Job. *Crenshaw*

223C. I Samuel. *Bailey*

223D. Song of Songs. *Crenshaw*

223E. Ecclesiastes. *Crenshaw*

223F. Proverbs. *Crenshaw*

223G. Genesis. *Bailey*

237. History of the Ancient Near East. Emphasis upon the religions, literature, and art of Mesopotamia. *Bailey*

242. Life after Death in Semitic Thought. Consideration of the various ideas from the early second millennium through the Intertestamental Period. Exegesis of selected Old Testament passages. Evaluation of recent research. Prerequisite: OT 11 or equivalent, knowledge of Hebrew helpful but not required. *Bailey*

302. Studies in the Intertestamental Literature. Selected documents of the Apocrypha and Pseudepigrapha examined exegetically and theologically in their relation to postexilic Judaism. *Staff*

304. Aramaic. A study of the Aramaic portions of the Old Testament and selected passages from the Elephantine and Qumran texts. *Wintermute*

343. Readings in Ancient Near Eastern Literature. *Staff*

350, 351. Seminar in Old Testament. Research and discussion on selected problems in the Old Testament and related fields. *Staff*

353. Seminar on Text Criticism. Emphasis upon transmission, versions, apparatus, and method. Prerequisites: NT 103-104 and OT 115-116 or equivalents. *Bailey and others*

373-374. Elementary Akkadian. Study of the elements of Akkadian grammar. Reading of neo-Assyrian texts shedding light on the Old Testament. Prerequisite: biblical Hebrew. (Two semesters: not credited separately.) *Bailey*

375-376. Elementary Ugaritic. Study of the elements of Ugaritic. Prerequisite: biblical Hebrew. (Two semesters: not credited separately.) *Staff*

NEW TESTAMENT

18. Introduction to New Testament Interpretation. An introduction to the literature of the New Testament with special attention to the perspectives and methods of historical-critical investigation and interpretation. *Efird, M. Smith, or Via*

103-104. Hellenistic Greek. Designed for beginners to enable them to read the Greek New Testament. (Two semesters: no credit will be given for 103 without completion of 104; however, students with at least one full year of college Greek may be permitted to enroll in 104.) *Efird*

105. Studies in Paul. An investigation of Paul's apostolate based upon the Acts and the Epistles with attention to Paul's theology as reflected in selected passages. *Efird*

114. Jesus in the Gospels. A consideration of the origins, transmissions, and literary fixation of the Jesus traditions with special attention to the message of the Kingdom, the problem of messianic self-consciousness, and the passion. *M. Smith or Via*

116. Exegesis of the English New Testament I. *Staff*

- 116A. Luke-Acts
- 116B. Galatians
- 116C. Selected Later Epistles
- 116D. I and II Corinthians
- 116E. Matthew

117. Exegesis of the English New Testament II. *Staff*

- 117A. The Gospel and Epistles of John
- 117B. Romans
- 117C. Revelation
- 117D. Mark

118. The New Testament in Greek. Readings in the Gospels. *Staff*

119. The New Testament in Greek. Readings in the Epistles. *Staff*

150. The Interpretation of Scripture A study of the methods by which modern interpreters seek to understand ancient texts, and of the problems and options involved in the move from text to sermon. Consideration of texts from both Testaments. Evaluation of the Lectionary as a means of interpretation. Prerequisite: OT 11, NT 18. *Bailey, Efird and others.*

180. From Text to Sermon. (See PR 180.) *Staff*

225. Living Issues in New Testament Theology. Critical examination of major problems and issues in New Testament interpretation and theology. Prerequisite: NT 18 or equivalent. *M. Smith or Via*

226. Exegesis of the Greek New Testament I. Prerequisite: NT 103-104. *Price, M. Smith, or Via*

- 226A. Matthew
- 226B. Romans
- 226C. Mark
- 226D. I and II Corinthians
- 226E. The Gospel and Epistles of John

227. Exegesis of the Greek New Testament II. Prerequisite: NT 103-104. *Price or M. Smith*

- 227A. Luke
- 227B. Galatians
- 227C. The Pastoral Epistles
- 227D. Acts

257. New Testament Ethics. An examination of several approaches to the scope and issues of New Testament ethics, including such topics as symbolic language in ethical discourse, the place of the law, conscience, community, sexuality, and property. *Via*

309. Hermeneutics. Consideration of the nature of understanding and of several interpretive methods including phenomenological, existential, historical, literary, and structural. Their application to New Testament texts, primarily the parables of Jesus. *Via*

311. Pharisaic Judaism in the First Century. A reading course in first-century Pharisaic Judaism. *Staff*

312. Pauline Theology. Studies in some aspects of Paulinism in the light of recent scholarship. *Staff*

314. Judaism and Christianity in the New Testament. A study of their interaction with special attention to Paul. *Staff*

319. The Gospel According to St. Matthew in Recent Research. *Staff*

340, 341. Seminar in the New Testament. Research and discussion on a selected problem in the biblical field. *M. Smith*

345. The Epistle to the Hebrews in Recent Research. *Staff*

II. Historical Studies

CHURCH HISTORY

13. Early and Medieval Christianity. A survey of the history of Christianity from its beginnings through the fifteenth century. *Steinmetz*

14. Modern European Christianity. A survey of the history of Christianity from the Reformation to the present. *T. Campbell and Steinmetz*

105. Studies in Patristic Christianity. Selected issues in the worship, theology, and politics of the early Church. *T. Campbell*

125. The Evangelical Heritage. A study of evangelical Christianity from the mid-seventeenth century to the present. *T. Campbell*

126. The English Reformation. The religious history of England from the accession of Henry VIII to the death of Elizabeth I. Extensive readings in the English reformers from Tyndale to Hooker. *Steinmetz*

183. Renewal Movements in Church History. An investigation of renewal movements as parallel phenomena throughout Christian history utilizing social scientific studies of culture change and focusing on ancient monasticism, Franciscanism, Anabaptism, and early Methodism as representative renewal movements. *T. Campbell*

202. Religion of the Cappadocian Fathers. Examination of the careers and writings of Basil, Gregory of Nyssa, and Gregory of Nazianzus. *T. Campbell*

235. The English Church in the Eighteenth Century. Studies of Christianity in England from the Act of Toleration, 1689, to the death of John Wesley, 1791. *T. Campbell*

236. Luther and the Reformation in Germany. The theology of Martin Luther in the context of competing visions of reform. *Steinmetz*

247-A, B. Readings in Latin Theological Literature. Critical translation and study of important theological texts in Latin from various periods of the history of the Church. Prerequisite: reading knowledge of Latin (introductory course offered in the classics department). *Staff*

334. Theology and Reform in the Later Middle Ages. Examination of selected issues in the life and thought of the medieval church from the twelfth century through the fifteenth century. Readings in popular and academic theologians from Pierre Abelard to Gabriel Biel. *Steinmetz*

339. The Radical Reformation. Protestant movements of dissent in the sixteenth century. Special attention will be devoted to Muntzer, Carlstadt, Hubmaier, Schwenckfeld, Denck, Marpeck, Socinus, and Menno Simons. *Steinmetz*

344. Zwingli and the Origins of Reformed Theology. Source studies in the early Reformed tradition. *Steinmetz*

HISTORICAL THEOLOGY

114. Christologies of the Early Church. Investigation of important soteriologies and debates centering upon the person of Christ from the second through the fifth centuries. *T. Campbell*

123. Readings in Historical Theology. Prerequisite: CH 13-14. *Staff*

183. Teachings of the Christian Churches. An historical examination of Eastern Orthodox, Roman Catholic, Protestant, and evangelical doctrinal statements. *T. Campbell*

201. Christian Thought in the Middle Ages. A survey of the history of Christian theology from St. Augustine to the young Martin Luther. *Steinmetz*

204. Origen. The systematic and apologetic writings of an important Alexandrian thinker and exegete of the third century. *Staff*

219. Augustine. The religion of the Bishop of Hippo in the setting of late antiquity. *Staff*

241. Problems in Reformation Theology. Prerequisite: permission of the instructor. *Steinmetz*

246. Problems in Historical Theology. Prerequisite: permission of the instructor. *Staff*

260. Life and Thought of the Wesleys. A seminar on John and Charles Wesley and their colleagues in relation to English culture and religion in the eighteenth century. Prerequisite: permission of the instructor. *T. Campbell*

308. Greek Patristic Texts. Critical translation and study of selected Greek texts illustrative of significant aspects of patristic theology and history from the second through the fifth century A.D. *Staff*

313. The Apostolic Fathers. A study of the religious thought in the writings of the Apostolic Fathers. *Staff*

317. Seminar in the Greek Apologists. A study of the apologetic writings of the Greek Fathers in relation to the challenges of their contemporary world. Special attention will be given to leading protagonists of late Graeco-Roman culture, such as Celsus, Porphyry, and Julian. *Staff*

318. Seminar in the Greek Fathers. A study of selected topics from the Greek Fathers. *Staff*

337. Theology of St. Thomas Aquinas. Intensive reading in the *Summa Theologica* and biblical commentaries. *Steinmetz*

338. Calvin and the Reformed Tradition. The theological development of John Calvin. A comprehensive examination of his mature position with constant reference to the theology of the other reformers. *Steinmetz*

AMERICAN CHRISTIANITY

28. History of American Christianity. A consideration of the nature of Christianity in America and the history of its development. *Gilbert and Marsden*

190. The Protestant Establishment and Secularization in Modern America. Exploration of Protestant contribution to the secularization of America since 1865 and of the ways in which Protestantism itself has become secularized. *Marsden*

267. American Puritan Thought through Edwards. A seminar built around some of the classic studies of American Puritan thought, culminating with a more intensive look at literature by and about Jonathan Edwards. *Marsden*

270. American Evangelicalism and Fundamentalism. A reading seminar covering major themes in the development of transdenominational evangelicalism and fundamentalism in America from the eighteenth century to the present. *Marsden*

293. Religious Issues in American History. A reading seminar devoted to selected topics, problems and issues in American religion. *Richey or Marsden*

295. Religion in the American South. A study of the interrelationships of southern religion and southern culture. *Marsden*

384. Religious Dissent in American Culture. History and significance of dissent in the theology and culture of America. *Staff*

385. Religion in American Literature. A critical study of the meaning and value of religious motifs reflected in American literature. *Staff*

395. Christian Thought in Colonial America. Exposition of the main currents in Protestant theology. *Staff*

396. Liberal Traditions in American Theology. A study of the main types of modern religious thought, beginning with the theology of the Enlightenment. *Staff*

397. Contemporary American Theology. A critical appraisal of major tendencies. *Staff*

180. Introduction to Asian Religions. Preliminary consideration of problems and methods in the study of religious traditions, followed by a survey of the historical development, beliefs, practices, and contemporary significance of the Islamic religion and the religions of India, China, and Japan. *Staff (Department of Religion)*

See other courses offered in the Department of Religion.

III. Theological Studies

CHRISTIAN THEOLOGY

32. Christian Theology. The course aims at furthering the active appropriation of the Christian faith in the context of the contemporary church and in engagement with the world of today. It treats principally the themes of the classic creeds or the traditional topics of dogmatics. It also introduces students to the epistemological issues of revelation, faith, authority, interpretation, and social location. *Staff*

102. Science and Biblical Theism. Implications of scientific knowledge in relation to biblical understandings of creation, revelation, and providence. *Staff*

105. A Theological Introduction to Roman Catholicism. An exploration of fundamental themes of Roman Catholic history, theology, liturgy and spirituality, with special attention to the mass. *Berger*

108. Major Types of Protestant Theology. A survey of Protestant theology from the reformers to Karl Barth. (For juniors only.) *Herzog or Langford*

110. This Life and the Age to Come. Christian eschatology and the meaning of history in the light of God's triumph over sin, suffering, and death. *Staff*

112. The Doctrine of the Holy Spirit. An examination of pneumatology under systematic categories which include: creation, Old Testament, prophecy, the life and ministry of Christ, the Church, salvation, the canon, the sacraments, and eschatology. *Turner*

118. Theological Controversies from Schleiermacher to Barth. Examination of major figures and theological issues of nineteenth-century Protestant theology. Attention to the relation of faith and culture, the role of experience in theological reflection, religion as illusion, the Jesus of history and the Christ of faith. *Fulkerson*

119. Prayer and Contemplation. *Herzog*

124. Issues in the Wesleyan Theological Tradition. A study of selected historical and constructive themes. Specification of topics will be made at each time of offering. *Langford*

134. Theology of Pentecostalism. An exploration of this tradition with examination of its distinctive emphases and interpretations of Christian faith. *Turner*

133. The Task of the Theologian. An introduction to the nature and task of theology as part of the life of the church. *Berger*

139. Women, Theology and the Church. *Fulkerson*

149. Images of the Church. Selected theologies of the nature of the church from the reformation to present. *Fulkerson*

200. The Person and Work of Christ. The problem of knowledge of Christ and formulation of a doctrine of His work and person in the light of biblical eschatology. *Staff*

210. Contemporary British Theology. Selected problems in representative British theological writings after 1900. *Langford*

211. Authority in Theology. The idea and function of authority in theology. *Langford*

214. Feminist Theology. Examination of feminist theologians and religionists, their critical perspective on the Christian tradition and constructive proposals out of the resources of "female experience." *Fulkerson*

215. The Nature and Mission of the Church. Christian understanding of the Church—biblical, historical, contemporary—with a view toward ecumenical doctrinal construction. *Herzog*

216. Kierkegaard Studies. Critical examination of selected works. *Staff*

217. Church and Sacraments. The basic teachings on church and sacraments, biblical, historical, contemporary. *Herzog*

220. Theological Explorations. A seminar on contemporary theological issues, content to be designated by the theological division. *Staff*

222. Contemporary Pneumatologies. An exploration of the doctrine of the Holy Spirit in relation to modern trends in theology with special emphasis on those cases where there is an accompanying social movement. *Turner*

225. The Christian Understanding of Human Nature and Destiny. Representative historical and recent theological interpretations of human nature, predicament, deliverance, and possibility. *Staff*

226. Theology and Contemporary Secular Understandings of Human Nature. Critical theological examination of selected current interpretations of human nature and the human situation. *Staff*

229. Tragedy and Christian Faith. An analytical and constructive philosophical interpretation of the fundamental tragic dimension of human life in the light of a Christian theological understanding. *Staff*

249. The Lord's Prayer. By studying historic and contemporary expositions of the Lord's Prayer, the course provides an introduction not only to the doctrines of God, humanity, prayer, and the kingdom, but also to the variety of the Christian spiritual tradition in time and space. *Wainwright*

256. John Wesley in Controversial and Ecumenical Theology. A study of John Wesley and his theology both in his engagements with other confessional traditions, and in his views on such matters as church, ministry, sacraments, and authority. Consideration will also be given to these topics in relation to contemporary theology, especially "Faith and Order." *Wainwright*

259. Icon Theology. A study of theological controversies surrounding the use of images in Christian worship, followed by an attempt to perceive the symbolic conventions and doctrinal content of some Eastern, Western, and contemporary icons. *Wainwright*

272. Theology of Paul Tillich. An examination of Tillich's philosophical theology. *Staff*

279. Understandings of the Resurrection in Contemporary Theology. A study of recent literature on the resurrection of Jesus Christ from the angles of exegesis, historical criticism, hermeneutics, and systematic significance. *Wainwright*

300. Systematic Theology. Method and structure of systematic theology, the doctrine of God, theological anthropology, and Christology. Prerequisite: CT 32 or equivalent. *Herzog or Langford*

303. Philosophical Method in Religious Studies. European hermeneutic (Gadamer) and American process philosophy (Whitehead and Hartshorne) as applied to Christian theology. *Herzog*

320. Theology, Power, and Justice. Critical examination of a major theme of modern thought in Schleiermacher, Hegel, Marx, and Tillich. *Herzog*

322. Nineteenth-Century European Theology. Protestant theology from Kant to Herrmann. *Herzog*

325. Philosophical Theology I. Selected readings from Plato and Aristotle which helped to shape philosophical theology from Origen through Augustine and Aquinas. *Herzog*

326. Philosophical Theology II. Main problems of philosophical theology in the modern period. *Staff*

328. Twentieth-Century European Theology. Critical examination of the thought of selected Protestant theologians from 1900 to 1950. Prerequisite: CT 32. *Herzog*

329. Readings in Theology and Language. Sample treatments of religious language in linguistic analysis, hermeneutical theory, literary criticism, liturgical practice, and fundamental theology. *Wainwright*

330. Contemporary Christologies. A seminar dealing with contemporary Roman Catholic and Protestant Christology. Readings and discussion will focus on theological proposals from major contemporary figures. *Wainwright*

331. Eschatology. A study of issues in individual, communal, and universal eschatology against the background of twentieth-century scholarly work in the kingdom of God. *Wainwright*

332. System in Theology. An examination of the various factors that go into the shaping of a systematic theology, followed by a study of several recent and contemporary examples of the genre. *Wainwright*

333. Systematic Theology: The Doctrine of the Trinity. Biblical bases, patristic developments, contemporary statements and connections. *Wainwright*

352. Seminar in Christian Theology. Research and discussion of a selected problem in the systematic field. *Staff*

CHRISTIAN ETHICS

33. Christian Ethics. The course tackles theological and conceptual issues to do with the ways in which Christian moral discourse is generated in the life of the church, in order that students may gain a sense of basic methodological alternatives in Christian traditions. It introduces students to such matters as the church's relationship to the world,

casuistry of various kinds, character formation, a moral psychology necessary for the development of Christian virtue, the place and function of scripture, and how Christians understand social responsibility. *Staff*

107. The Biblical Bases of Christian Ethics. Examination of major themes and moral teachings, principally in the Decalogue, the Gospels, and the Epistles, with application to some contemporary issues. Prerequisite: OT 11, NT 18, or equivalent. *H. Smith*

112. Technology and Christian Ethics. The impact of the technological revolution upon American culture, and a normative Christian response. *Staff*

113. Contemporary Issues in Christian Morals. Constructive examination of selected areas of public and private morality. *Staff*

130. Dying and Death. Critical consideration of biblical, legal, medical, and ethical perspectives. Prerequisites: OT 11, NT 18, or equivalents. *Bailey, H. Smith, and others*

136. Perspectives on Food and Hunger. An interdisciplinary symposium on national and world hunger and malnutrition, including (whenever possible) student involvement in local hunger-related agencies. *Staff*

194. The Protestant Church and American Culture. Analysis from the perspective of Christian ethics of current problems in the interpretation of church and culture with explicit reference to the parish setting. *H. Smith*

205. War in the Christian Tradition. An analysis of how Christians have understood and evaluated war. Particular attention to the question of whether war should not be regarded as a positive moral good. Works by Augustine, Aquinas, Bainton, Ramsey, Childress, Niebuhr, and Johnson will be considered. *Hauerwas*

213. Christian Ethics in America. *Hauerwas*

220. Ethical Explorations. A seminar on contemporary ethical issues, the specific content in any given semester to be designated by the Theological Division. *Staff*

230. Moral and Value Education. A critical, theological investigation of Durkheim, Dewey, Simon, Kohlberg, Bull, Rokeach, and implications for education in church and society. Prerequisites: CHE 33 and CED 105. *H. Smith and Westerhoff*

242. Human Sexuality. Examination of biological, biblical, cultural, and other aspects of human sexuality, together with analytical and constructive interpretation. Permission of instructor required. *H. Smith*

244. Interdisciplinary Seminar in Medical-Legal-Ethical Issues. A seminar composed of students and faculty from the Medical, Law, and Divinity Schools for critical consideration of selected pertinent issues of mutual professional interest. Prerequisite: permission of instructor. *H. Smith and others*

245. Ethics in World Religions. Moral foundations, assumptions, and applications in such historic faiths as Hinduism, Buddhism, Confucianism, and Islam, in the light of Christian ethical perspectives. *Staff*

262. Marxist Ideology and Christian Faith. Comparative examination of Communist and Christian doctrines such as man, society, sin, history and eschatology, together with an introduction to the contemporary dialogue. *Staff*

266. Ethics and Health Care. Critical examination of philosophical and theological bases of medical practice, and analysis of selected aspects of biomedical technologies, with particular attention to informing ethical assumptions. *H. Smith*

268. Revelation and Authority in the Church. A critical and constructive examination of contemporary concepts, exploring such questions as "Is the church's memory

autonomous or constituted and directed by what it remembers? How does ecclesiology shape epistemology, and vice-versa? Does the word of the church also become the mission of the church? Is the word of God constitutive of human community?" *H. Smith*

290. Current Problems in Christian Social Ethics. A critical study of secularization, the technological revolution, and the ecological crisis. *Staff*

291. Historical Forms of Protestant Ethics. A survey of major types of Protestant ethical theory from Luther through contemporary figures. *Staff*

292. Happiness, the Life of Virtue, and Friendship. An investigation of the interrelation of these themes in selected authors. An examination of whether the loss of the interrelation of these themes accounts for some of the problems of modern philosophical and theological ethics. *Hauerwas*

294. Christianity and the State. "Civil religion" in its historic development and contemporary expressions in America. Christian ethical premises of democratic political theory and practice. The relationships of church and state. *Staff*

383. Moral Theology in the Twentieth Century. Critical and comparative examination of ethical theory as exhibited in the work of selected contemporary theologians. *H. Smith*

387. Ethical Method. Selected methodological issues in contemporary theological ethics. *H. Smith*

388. Ethics and Health Care. A critical study of selected aspects of modern biomedical technology with special reference to the ethical assumptions informing their development and practice. *H. Smith*

389. Christian Ethics and Contemporary Culture. A study of the interaction between Christian thought and current secular social theory. *Staff*

BLACK CHURCH STUDIES

100. Introduction to Black Theology. An examination of the historical roots of black theology with special attention to the treatments of traditional themes and problems in theology by black theologians and their rationale for the black theological enterprise. *Turner*

124. The Black Church in America. A consideration of the historical and theological development of the separate black Christian denominations in America with attention to some of the major leaders, black worship, and black preaching. *Turner*

126. Black Religion and Social Conflicts in America. An examination of some of the reactions of black religious groups to the limits placed upon black people in American life, efforts made to break down racial barriers in society, and attempts to institutionalize black responses to such barriers. *Turner*

128. The Life and Thought of Martin Luther King, Jr. An examination of the life of Martin Luther King, Jr., as a minister and leader of the civil rights movement. *Staff*

144. Selected Topics in Black Church History. An exploration of pivotal events, key issues, and persons in the development of the black church in America. Prerequisite: BCS 124 or permission of the instructor. *Staff*

WORLD CHRISTIANITY AND ECUMENICS

124. The Christian World Mission. A study of theological foundations, guiding principles, and contemporary problems of the world Christian community. *Staff*



129. Ecumenical Visions of the Church in the Twentieth Century. A study of some of the major theologies of the Church in our century, as they emerged together with the growth of the ecumenical movement. The course will focus on how specific ecclesiologies treat the question of the unity of the Church(es) in the light of ecumenical hopes, proposals for unity and practical endeavors. *Berger*

133. The Expansion of Christianity. A survey of the spread of Christianity and the growth of the worldwide Church with special emphasis on nineteenth- and twentieth-century Protestantism in the non-Western world. *Staff*

135. Contemporary Issues in the World Church. Analysis of political, social, cultural, and religious conditions in a selected area of the world, and of theological-ethical insights and perspectives within the indigenous Christian community. *Staff*

156. The Ecumenical Movement. Its contemporary development, structures, activities, and problems, against the background of Church unity and disunity. *Staff*

263. Third World Theology. An examination of selected theological writings from Asia, Africa, and Latin America, comparing their perspectives and their unique contributions with contemporary Christian thought. *Staff*

386. Christianity in Dialogue with Other Faiths. Contemporary currents of Christian thought as they relate to resurgent non-Christian religions and involve new formulations of a theology of mission. *Staff*

IV. Ministerial Studies

THE CHURCH'S MINISTRY

10. A general and integrated introduction to critical reflection on the history, theology, and practice of ordained ministry in Christian communities. Required of entering M.Div. students. *Staff*

100. A sequel course, accenting the practice of ministry, to be taken after a M.Div. student has completed fifteen courses. *Staff*

THE CARE OF THE PARISH

50. Church and Community. The structure and dynamic factors shaping the present-day community together with their import for the work of the church. *Wilson*

128. Ministerial Leadership and Participative Skills. A study of the pastor's role as participant-facilitator with attention to organizational theory and facilitative skills employing the group workshop method of learning. *Staff*

129. The Pastor as Consultant to Church Organizations. A consideration of the pastor's role as organizational consultant with special emphasis on data gathering, diagnosis, and intervention using experiential learning designs. *Staff*

130. Planning and Directing the Church's Program. Principles of planning, organizing, staffing, directing, and evaluating the program of the local church. *Staff*

142. Women and Ministry. Theological and practical issues related to women and ministry. *Staff*

147. The Pastoral Responsibility for Administration. A consideration of the major responsibilities of the pastor in the administration of the local church. *Staff*

148. Christian Stewardship and Church Finance. A seminar to consider the principles of stewardship, education, budget-making, enlistment in church support and church financial management in theological perspective. *Staff*

151. The Town and Country Church. The small church, the circuit church, circuit administration, larger parish and group ministry, and the town and country movement. *Wilson*

152. Evangelism As a Pastoral Concern. A study of the nature, purposes, and methods of contemporary Christian evangelism with special attention to the local church. *Staff*

154. The Urban Church. The function, nature, program, and administration of the effective city church and of the urban minister's distinctive task. *Wilson*

155. Church Polity.

155B. The Baptist Churches

155C. The United Church of Christ

155D. The Presbyterian Churches

155E. The Christian Church (Disciples of Christ)

155F. The Episcopal Church

157. The Church and Social Change. A sociological study of the relationship of the Church to the process of social change, including the role of the Church as innovator, the Church as participant in social movements, method(s) of accomplishing change, and the religious leader as an agent of social change. *Wilson*

158. Contemporary Religious Sects. The nature, ideology, development, clientele, and role of contemporary religious sects; the process by which such sects develop into established organizations; and their relationship to the mainline churches. *Wilson*

159. Early Methodism: History, Theology, and Polity. A study of the character and development of Methodism, beginning with John Wesley and tracing important features of this tradition through the nineteenth century. *D. Campbell, Goodson, and Wilson*

160. Twentieth-Century Methodism: History, Theology, and Polity. The development of the United Methodist Church, focusing on theological diversity and patterns of organizational life, with major concentration on the polity of this church as provided by the current Discipline. *D. Campbell, Goodson, and Wilson*

189. The Multiple Staff Ministry. Group work, leadership, and organizational theories as applied to staff ministries in large church and cooperative parish settings. *Staff*

200. Church Research. Methods of research and survey for the gathering, analysis, and interpretation of church and community data, together with preparation and use of denominational statistics. *Wilson*

220. Seminar in Contemporary Ministries. A seminar in patterns and issues of contemporary ministries, content to be designated by the Ministerial Division. *Staff*

CHRISTIAN EDUCATION

22. The Spiritual Life. An introduction to spirituality, spiritual formation, and the development of a personal spiritual discipline. *Westerhoff*

25. Education as a Pastoral Ministry. An introduction to Christian formation, education, and instruction within the life of a worshipping faith community. *Westerhoff*

102. Christian Education and the Small Membership Church. An overview of the educational ministry of churches with small memberships including goal setting, program-format, leadership development, selection of curriculum resources, organization-design, and evaluation methodology. *Shockley*

109. Ministries with Youth. An experimental approach to inventing strategies for church educational ministries with junior highs, senior highs, and older youth. *Atten-*

tion will be given to teaching methods, curriculum resources, confirmation, and various teaching settings. *Shockley*

110. Educational Ministries with Adults and Families. An introductory course to the educational ministry of the church with adults and families. Guidance and resources toward the development of comprehensive programing. Attention will be given to adult ages and stages and family life cycles. *Shockley*

112. Educational Ministries with Children and Youth. An introductory course to the educational ministry of the church with children and youth. It will consider foundations, religious development theories, goal-setting, teaching-learning, curricula, and leadership education. *Shockley*

132. Curriculum, Teaching, and Learning in Christian Education. An introductory survey of teaching-learning theory, principles and practices, curriculum designs and resources, from a local church perspective. *Shockley*

153. Education and Social Issues. An exploration of contemporary social issues and their relationship to education and to the church. *Shockley*

169. Major Issues in Christian Education. Critical examination of selected issues in Christian education. *Staff*

185. The Arts and the Church. An exploration of the intuitive way of knowing and the place of the imagination in Christian faith and life with special attention to the use of the arts in the church, in Christian education, and in worship. *Westerhoff*

190. Pastor and Educators as Teachers. An applied course in the teaching/learning process, along with models, strategies, and methods of planning, designing, and conducting adult education in the church. *Westerhoff*

220. Colloquium in Religious Education. *Staff*

233. Spiritual Direction. An introduction to spiritual direction with special attention to the *Spiritual Exercises* of St. Ignatius and discernment. Prerequisites: CED 231 and permission of the instructor. *Westerhoff*

250. MRE Senior Symposium. This course will deal with the theory and practice of educational leadership in the church and will include the following: Field Education seminar, professional competence evaluation, and comprehensive examination. *Shockley and Westerhoff*

PASTORAL PSYCHOLOGY

64. Pastoral Counseling in a Parish Setting. The local church as the setting for pastoral counseling. Lectures, group supervision, and student verbatim materials will be utilized. Prerequisite: currently placed in a field setting or permission of instructor. *Mickey*

77. Pastoral Care in the General Hospital Setting. An examination through intensive individual and group supervision, of the student's pastoral ministry to the ill, the dying, and the bereaved in the general hospital setting. (Not recommended for those planning to take PP 181 or 182.) *Staff*

171. Pastoral Counseling. Consideration of the structures and processes of pastoral counseling; pastoral evaluation, referral, intake contract, goals, transference, termination, and other special problems. Prerequisite: permission of instructor. *Staff*

172. Premarital Counseling. Pastoral care in marriage and family life with special emphasis on premarital guidance within the context of the local church's program of family life education. *Staff*

173. Psychotherapy and Sanctification. An analysis of structuring and growth processes in psychotherapy in the light of a Christian understanding of sanctification. *Mickey*

174. Theology and Personality Processes. Theological and psychological understandings of basic human experiences; explorations of the dynamics and values of religious practices, developmental concerns, self awareness. *Mickey*

175. Special Practicum Projects. For advanced students who want additional clinical experience under supervision in a pastoral care setting (inner-city; alcoholic rehabilitation; counseling; etc.). *Staff*

176. Pastoral Care and Persons in Institutions.

176B. Lectures by staff and ward visits at the Murdoch Center for the Mentally Retarded and the facilities in the Butner, North Carolina, complex (state hospital, alcoholic rehabilitation, training school). *Staff*

176C. Lectures by staff and ward visits at the Central Prison in Raleigh and related correctional facilities. *Staff*

176D. The Church's ministry to the elderly and home bound explored through lectures, case conferences, and visits to the elderly and homebound parishioners of local Durham churches. *Staff*

178. Power and Restraint in the Parish. Exploring the nature of power and leadership in developing skills for local church ministry, utilizing theological, psychological, sociological insights. Verbatim materials. *Mickey*

180. Pastoral Care and Women. Lecture-discussions by staff and visiting professionals to aid in developong skill in the pastoral care of women. Issues addressed: moral development, sexual dynamics, dual career families, child and spouse abuse, women in leadership positions. *Mickey*

181-A, B. Basic Clinical Pastoral Education, Extended. A semester long unit of CPE in the fall semester and a semester long unit of CPE in the spring semester. The program is accredited by ACPE and is conducted at Duke Hospital. The maximum credit is two course credits. *Staff*

182-A,B,C. Basic Clinical Pastoral Education. Units of Basic CPE offered in the summer, fall, and spring in programs accredited by ACPE. (Two course units each, maximum credit.) *Staff*

183. Pastoral Care: Individual and Community. A seminar examining the practice of pastoral care. Focus on assessment and intervention by the counseling pastor in critical human situations. *Meador*

271. Marriage and Family. The psychodynamics of marital conflict and family problems; principles and procedures in marriage and family counseling. (For seniors and Th.M. candidates.) *Staff*

273. Seminar in Pastoral Theology: Theological Dimensions of Pastoral Counseling. Research and discussion of issues of developmental psychology and spiritual growth. *Mickey*

275. Individual Study in Pastoral Psychology. Selected readings in major issues in pastoral psychology issuing in a research or honors paper. *Staff*

278. Psychological Theories of Personality. A systematic presentation of leading personality theories, with reference to developmental processes (motivation, cognition, learning, etc.) and their implications for Christian ministry. *Mickey*

281-A,B,C. Advanced Clinical Pastoral Education in Pastoral Care and Counseling. Pastoral care with inpatients and pastoral counseling of individuals, couples, families, and groups in a pastoral counseling center. (Two course units each.) *Staff*

PREACHING

20. Communication Lab. A workshop on principles of speech and effective oral communication, making extensive use of audio-visual resources and private conferences. To be taken concurrently with PR 30. *Staff*

30. Theology and Practice of Preaching. The development of a theology of preaching and methods of sermon construction, including preaching in class, critique, private conference, and local church evaluation. Prerequisite: OT 11 or NT 18 or permission of instructor. *Lischer and Noren*

161. Preaching and the Church Year. Preaching the lectionary texts in the context of the church's worship and calendar. The appropriate cycle of the lectionary will be followed. In-class preaching and evaluation. Prerequisite: PR 30 *Lischer and Noren*

162. The Rhetoric of Preaching. Preaching and the art of language. A survey of rhetorical theories, forms, and techniques in service to the Gospel. In-class exercises, preaching and evaluation. Prerequisite: PR 30. *Lischer*

164. Proclaiming the Parables. Approaches to the interpretation and proclamation of the parables of Jesus. Readings in nonbiblical narrative and parable. In-class storytelling and preaching. Prerequisite: PR 30. *Lischer*

165. Preaching as Public Address. A workshop on preaching and worship leadership organized around the principles of speech and effective communication. Extensive use of audio-visual recordings and private conferences. Prerequisite: 30. *Staff*

180. From Text to Sermon. Preaching from Biblical sources. Emphases upon the goal and methodology of exegesis, the hermeneutic problem, and verbal communication in the present. Prerequisite: PR 30. *Staff*

182. Preaching Practicum. An advanced laboratory course for extra competence in the preparation, delivery, and evaluation of sermons. Prerequisite: PR 30. *Lischer and Noren*

183. Preaching in the Black Community. A study of the style and content of black preaching with attention to the unique roles of black preachers in society. An analysis of the essential characteristic of preaching in the black church. Prerequisite: PR 30. *Turner*

184. Preaching in the Wesleyan Theological Tradition. A study of selected major themes in Wesleyan theology and their interpretation in contemporary preaching. Prerequisite: PR 30. *Noren*

186. Twentieth-Century Preaching. A study of contemporary preaching based on printed, recorded, audio- and video-taped sermons of leading homiletics of our age. Prerequisite: PR 30. *Noren*

189. Preaching in Context. Prerequisite: PR 30. *Turner*

196. Preaching in the Parish. A consideration of preaching in relationship to pastoral duties and the total task of ministry with attention to week-by-week preaching in the parish setting. Some attention will be given to funerals and crisis situations. Prerequisite: PR 30. *Staff*

280. History of Preaching. A study of theological trends and significant personalities in homiletics in various periods from the Apostolic Age to the present. Prerequisite: PR 30. *Noren*

281. Advanced Sermon Analysis Seminar. A critical study, on the basis of selected sermons and student presentations, of principal and practical problems facing the contemporary preacher. Prerequisite: PR 30. *Lischer or Noren*

282. Women and the Word. An examination of theological, social, historical, and communication issues pertaining to women and preaching. Sermons, video-tapes and other resources will be used in analyzing the styles and content of preaching by women representing various traditions and historical periods. Prerequisite: PR 30. *Noren*

283. Theories of Preaching. Significant theories of preaching from Augustine to the present. Seminar presentations and in-class preaching and valuation. Prerequisite: PR 30 or permission of instructor. *Lischer*

WORSHIP AND CHURCH MUSIC

123. Baptism, Confirmation, and Renewal. Biblical, historical, and theological perspectives on the sacrament of Christian initiation. Issues related to the catechumenate, baptismal practice, confirmation, and rites of renewal will be examined with reference to the reform of the liturgy. *Staff*

141. The Church Year. An historical and practical study of the church year and lectionary with major attention to the ecumenical and United Methodist calendar. *Staff*

153. The Leadership of Worship. A practicum utilizing a laboratory setting devoted to the development of styles of liturgical leadership appropriate to pastoral ministry. *Staff*

162. Hymnody. A survey of hymns, various hymn types and styles, and issues in hymnody designed for persons in or preparing for Christian ministry. Includes an introduction to the fundamentals of hymnology. *Arcus*

167. Baptism and the Lord's Supper. Study of these sacraments with attention given to major representative traditions and to varieties of present observance and practice. *Staff*

168. Worship in the Wesleyan Tradition. The history, development, and current trends in United Methodist worship along with practical experience and concerns related to worship leadership in United Methodist churches. *Staff*

178. Christian Worship. A survey of the history of Christian corporate worship. Examination of the major biblical, historical, and theological developments in worship from Old Testament times to the present. Readings in liturgical thought through the ages with comparative study of selected liturgical traditions. *Staff*

180. Church Music. A two-fold study including: (1) a survey of the great monuments of church music; (2) musicianship, song-leading, and basic conducting with an emphasis upon the selection and use of hymns and other music from the *Methodist Hymnal* in public worship. *Staff*

203. Directed Reading in Church Music. An advanced course offering students the opportunity to explore an area of church music of special interest to them, culminating in a major paper and/or public presentation. Includes compilation of bibliography for the study of church music. Enrollment limit: ten. Prerequisite: consent of instructor. *Arcus*

250. Advanced Seminar in Liturgical Studies. Reading and research in a selected area of liturgical study to be announced. *Staff*

251. Studies in Spirituality. A consideration of different dimensions of the spiritual life. *Staff*

SPIRITUALITY

See the respective divisional listings for course descriptions.

OT 2XX. Biblical Prayer. *Crenshaw.*

CH 125. The Evangelical Heritage. *T. Campbell.*

CT 112. The Doctrine of the Holy Spirit. *Turner.*

CT 119. Prayer and Contemplation. *Herzog.*

CT 249. The Lord's Prayer. *Wainwright.*

CED 22. The Spiritual Life. *Westerhoff.*

CED 233. Spiritual Direction. *Westerhoff.*

CW 251. Studies in Spirituality. *Staff.*

V. Clinical Training and Internships

CLINICAL TRAINING IN PASTORAL PSYCHOLOGY

Students may earn up to two course credits for a quarter or unit of clinical pastoral education in programs accredited by the Association for Clinical Pastoral Education (ACPE).

Students involved in clinical training under the direct supervision of members of the pastoral psychology staff during the academic year should register for credit under PP 182 for two course units unless a course credit has already been received for PP 77, in which case only one rather than two credits will be granted for the CPE quarter. Students should apply for such training through the Director of Clinical Pastoral Education.

Students involved in clinical training in summer CPE quarters should register with ACPE and the Associate Dean for Academic Programs as soon as accepted for training by a chaplain supervisor. Upon the receipt of a supervisor's report at the end of the training period the student will receive two course units of transfer credit.

INTERNSHIPS

In consultation with the Associate Dean for Field Education and the Associate Dean for Academic Programs, an individually designed internship may be developed in a particular ministerial vocational area of interest. Under certain circumstances it may be possible to earn one unit of field education and two course credits through such internships. Such programs must be formulated and recorded in advance in the offices of both field education and curricular affairs.

125-126. Special Ministry Internship. When a student needs to develop professional competencies in a highly specialized form of ministry, the Associate Dean for Field Education will assist in designing an appropriate learning contract and in negotiating for a suitable placement setting, provided the arrangements meet the basic criteria approved by the Field Education Committee.

131-132. Ministry through Social Agency Internship. A twelve-month placement in a regular personnel position in a social service agency to meet the job description of the agency and to develop a personal mode and style of ministry in a secular setting through understanding, appreciation, involvement in, and critical theological reflection upon environment, structures, values, and decision-making processes as conveyed by the conduct of the agency.

137-138. Parish Ministry Internship. A twelve-month placement, individually designed to engage the student in specified learnings in a wide variety of ministry functions in a local parish, under qualified supervision and using the guidelines of a learning contract.

143-144. Campus Ministry Internship. A nine- to twelve-month placement in approved locations designed to provide special learnings in delivering a ministry to college students under qualified guidance and utilizing a learning contract which specifies seminars, a personal journal, directed reading, and consultations to develop competency in these functions.

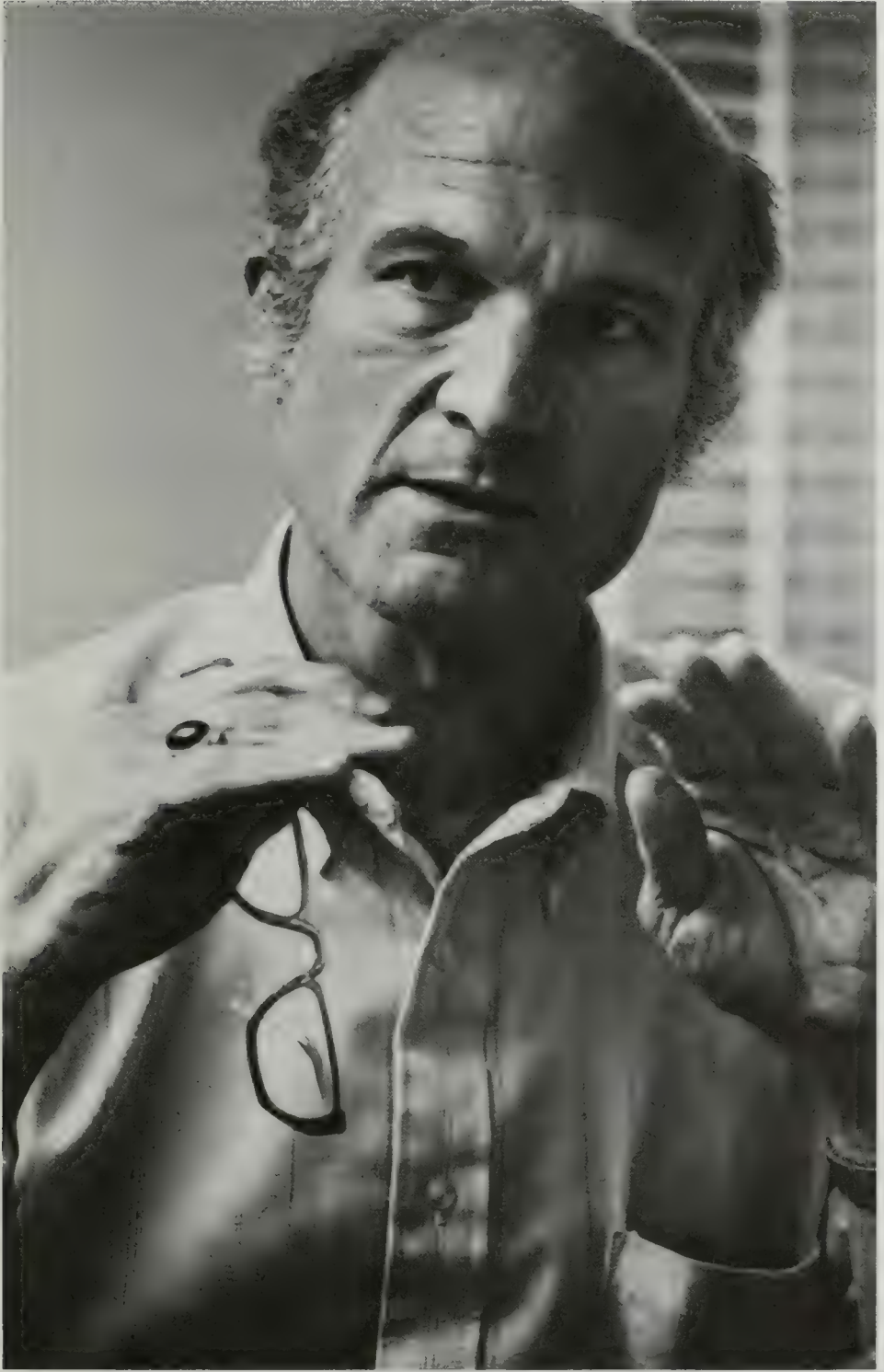
175-176. Clinical Pastoral Education Internship. A twelve-month placement in a clinical program accredited by the Association for Clinical Pastoral Education (ACPE).

197-198. Mission Internship. A special internship to prepare for service in church missions may be arranged by enlisting in the national or overseas program of the United Methodist Board of Global Ministries for one to three years. As a requirement for agency planning, applications should be initiated in the fall of the middler year. Other denominational and/or work-study experiences abroad may be given field education credit by special arrangement with the Associate Dean for Field Education.

Department of Religion—Graduate Courses

The following courses are offered periodically in the Graduate Department of Religion by Department of Religion faculty and may be taken by Divinity students with permission of the instructor.

- 217. Islam in India
- 219. Augustine
- 221. Reading in Hebrew Biblical Commentaries
- 230. The Meaning of Religious Language
- 231. Seminar in Christianity and Contemporary Thought
- 233. Modern Narrative and Religious Language
- 243. The Archaeology of Palestine in Biblical Times
- 244. The Archaeology of Palestine in Hellenistic-Roman Times
- 248. The Theology of Karl Barth
- 252. Nineteenth- and Twentieth-Century Roman Catholic Theology
- 254. Introduction to African Religions
- 255. Seminar in African Religions
- 258. Coptic
- 264. The Sociology of the Black Church
- 265. The Religions of the West Africa Diaspora
- 280. The History of Religions
- 281. Phenomenology and Religion
- 284. The Religion and History of Islam
- 301. Seminar in Contemporary Christian Ethics
- 302. Studies in Intertestamental Literature
- 304. Aramaic
- 304A. Targumic Aramaic
- 306. Language and Literature of the Dead Sea Scrolls
- 310. Readings in Judaica
- 323. A-B. Comparative Semitic I-II
- 324. Readings in the History of Religion
- 360. Special Problems in Religion and Culture
- 370. Seminar in Religion and Literature
- 380. Existentialist Thought



Stanley M. Haverivas, Professor of Theological Ethics

Appendix

GUIDELINES FOR INCLUSIVE LANGUAGE
Duke Divinity School

... the decadence of our language is probably curable. Those who deny this would argue, if they produced an argument at all, that language merely reflects existing social conditions, and that we cannot influence its development by any direct tinkering with words and constructions. So far as the general tone or spirit of language goes, this may be true, but it is not true in detail. Silly words and expressions have often disappeared, not through any evolutionary process but owing to the conscious action of a minority.

George Orwell
Politics of the English Language

The necessity for change is the parent of tradition. If we want a change in our language to come, we must first facilitate that change through concerted action. Our language is determined both by who we are as individuals and communities and who we want to become.

The affirmation of the integrity of people with various opinions and interpretations on the issue of language is assumed. It is recognized, however, that exclusive language can work unwitting and unintended harm by distorting reality and excluding members from our community. Therefore, all members of this Duke Divinity School community (students, faculty, administrators, and staff) are invited to join together in using language which most adequately reflects the unity of the people of God and the reality of God.

LANGUAGE ABOUT PERSONS

I. Generic Usage

Although "man" originally carried the meaning of both "human beings" and "adult males," such can no longer be assumed. Even though technically "man" is inclusive, its actual use is often exclusive.

- A. Use precise language. When in the past you would have been inclined to use the generic term "man," find creative ways to use such words as "humankind, humans, persons, everyone, men and women, children of God, etc."
- B. Use words that do not include "man" when referring to occupations and positions that can include both males and females. Alternative descriptions can often be found which are not awkward compounds:

<i>(instead of)</i>	<i>(try)</i>
Clergyperson	Clergy
Chairperson	Chair
Congressperson	Representative
Policeman	Police Officer
Fireman	Fire Fighter
Chairperson	Moderator, Presiding Officer, Convenor

II. Pronoun Usage

Pronoun usage which avoids gender specific categories is an effective way to include all members of society or a given community in general references. While English grammars generally maintain that the nonspecific individual be referred to as "the," such a reference is not inclusive. One should attempt to make all pronoun references inclusive.

- A. When speaking in general terms or when referring to both women and men, use pronouns so as to make explicit that both men and women are included. This may be accomplished by using such methods as "he and she," "hers and his," or combinations such as "he/she," "s/he," and "his/hers."
- B. Other approaches to the pronoun issue include:
 1. Use writing that reduces unnecessary or excessive gender specific pronouns: "The average American drives his car to work" can become "The average American drives to work."
 2. Rephrase statements into the plural: "Most Americans drive their cars to work."
 3. When speaking in generic terms or when including women and men in the same group, some guides suggest alternating female and male pronouns: "A person should take good care of her car. He should check the oil level daily. She should also make sure that the tires are properly inflated."
 4. The indefinite use of the second person pronoun *you* to refer to people in general is a widespread conversational device. You must realize, however, that the use of the second person in writing creates an intimate relationship between the writer and the reader. For this reason, when you use the second person, be sure that the person or persons to whom the argument is directed is clearly identified.
 5. Masculine pronouns can be replaced by the impersonal pronoun *one* and this is still preferred in formal usage. However, one should use this form sparingly.

III. Forms of Address

Traditionally there has been little need for particular ways to refer to individual women or married individuals with different titles. Women did not have titles other than "Miss" or "Mrs.," and it was assumed that their identity derived from their marital status. That assumption is no longer valid, and forms of address should recognize that identity which women have as individuals.

- A. In referring to an individual woman there is no need to refer to her marital status, just as traditional references to men give no indication of their marital status. Examples:
 1. Ms. Lorna Stafford
 2. The Reverend Ms. Louise Lind
 3. The Reverend Mr. Louis Lind
 4. Dr. Jennifer Jones
- B. Different titles should be recognized when addressing married couples. Examples:
 1. Clergywoman married to a layperson: The Reverend Ms. Sally Jones and Mr. Gerald Jones

2. Clergy couples: The Reverends Ms. Sally Smith and Mr. Gerald Jones; The Reverends Ms. Sally Jones and Mr. Gerald Jones; The Reverends M/M Sally and Gerald Jones
 3. Other titles: Professor Louise Lind and Dr. Jonathan Smith; Drs. Cynthia and Jackson Whittaker
- C. While the use of individual names is assumed when married people have different titles, this is desirable for others as well. Instead of Mr. and Mrs. Steve Jackson, try:
1. Steve and Lorna Jackson
 2. Mr. and Mrs. Steve and Lorna Jackson
 3. M/M Steve Jackson and Lorna Stafford
- D. Titles can be eliminated altogether, but in formal usage this practice is generally not preferred.

IV. References to Collective and Abstract Nouns

Social institutions (e.g., Church), concepts (e.g., evil), or inanimate objects (e.g., a ship) do not have gender. Referring to them as female or male encourages stereotyping groups of people with the qualities specific to that institution, concept, or object.

- A. Pronouns that refer to collective and abstract nouns should be neuter, except in direct quotations.
 1. Direct quotation: "And I saw the holy city, new Jerusalem, coming down out of heaven from God, prepared as a bride adorned for her husband. . . ." (Rev. 21:2).
 2. Modern usage: The Church is described as the new Jerusalem. It is adorned for the worship of God, and its relationship with God is seen as a gift from God.
- B. Direct quotations can often be made inclusive through the use of brackets: "A person must make his [or her] own way in this broken world."

LANGUAGE ABOUT GOD

While these guidelines are designed mainly for use in terms of language about people, care and attention should be given also to language about God in writing, speaking, and in worship. Language about God should articulate the variety and richness of God's manifestations to humankind. It should also respect the deeply personal nature of God as expressed through the Trinity. These suggestions are offered as a beginning point from which one can develop androgynous language about God.

- A. The exclusive use of either masculine or feminine pronouns for God should be avoided.
- B. Metaphors showing God's personal relationship with humans should be used, but need not be personalized with "he" or "she."
- C. A variety of sex-specific metaphors can be used: "God is the father who welcomes his son home, but she is also the woman who searches for the lost coin."

Imagination, patience, and diligence are required in order to use language which expands and enriches our understanding of God.

JUDICIAL PROCEDURES

Duke Divinity School

Adopted January 1987, The Divinity School Community:

"Duke University expects and will require of all its students continuing loyal cooperation in developing and maintaining high standards of scholarship and conduct. . . . Any student, in accepting admission, indicates willingness to subscribe to and be governed by these rules and regulations and acknowledges the right of the University to take such disciplinary action, including suspension and/or expulsion, as may be deemed appropriate, for failure to abide by such rules and regulations or for conduct adjudged unsatisfactory or detrimental to the University."

[*The Bulletin of Duke University: The Divinity School: "Admissions—Conduct of Students"*]

The judicial system hereinafter described is constituted for the Divinity School Community as required by the Judicial System of Duke University and the University's rubric on Student Life. It conforms to and functions within those larger structures. [Reference will be made in this document to the most readily available specification of University rules, *The Bulletin of Duke University: "Information and Regulations"* which may be consulted in the office of either Associate Dean or in the Divinity School Library and obtained through the Office of Student Life of Trinity College. See sections on "Student Life" and Appendix entitled "The Judicial System of Duke University."]

The Divinity School Judicial Board

The Divinity School Judicial Board [hereinafter simply "the board"] is composed of the two associate deans and five students (one of whom shall be designated an alternate) and three faculty or staff members (one of whom shall be designated an alternate). They shall be chosen respectively by the Student Representative Assembly and the Divinity School faculty through the normal procedures for constituting committees. The board is constituted at the opening of school in the fall; members serve until the opening of the next school year or until replaced by their respective governing bodies. At its first meeting, the board shall elect a chair from among its appointed and regular membership.

A. Hearing Alternatives.

Students accused of violating University regulations or academic expectations may elect either (1) an informal hearing in which the accused student and the accusing student, faculty member or staff member appear before the appropriate associate dean [see below] and the student's faculty adviser; (2) a formal hearing before the board according to procedures outlined below. (If the severity of the offence dictates or if procedural difficulties loom, the chair and associate dean may determine that a formal hearing is required or that higher University boards or civil courts must have jurisdiction.) (3) Under either option, the person accused may be advised by a person from within the Divinity School Community. The adviser may attend but may not speak during the hearing and will be excused during deliberation over verdict and sanctions.

B. Jurisdiction.

Matters concerning academic offences—cheating, plagiarism, theft of papers, library misconduct—shall be heard, formally or informally, by the Associate Dean for Academic Programs. Offences concerning student life, the university community, field education, or professional ethics shall be heard, formally or informally, by the Associate Dean for Student Life and Field Education.

C. Offences.

Among the academic offences deemed unacceptable at Duke University are plagiarism—the submission of work as one's own which contains unacknowledged

or improperly acknowledged words or ideas of another—submission of papers in more than one course without the explicit permission of the instructors concerned, the purchase or theft of papers, cheating and abuse of the library. Student life offences include abuse of university property, theft, falsification of financial aid applications, use of illegal substances and physical, mental or sexual harassment. For detailed specification and illustration of student life offences see the aforementioned *Bulletin: Information and Regulations* under "Student Life" and "University Regulations and Policies."

The same volume treats academic offences in the section entitled "Academic Honesty." Students are advised to purchase at the Duke University Bookstore the *Composition Guide . . . Duke University* by Ronald R. Butters which provides detailed guidance on correct procedure and clear illustrations of impermissible practice.

D. Duties of the Associate Deans.

The associate deans shall be responsible for hearing complaints, conducting investigations, gathering evidence, determining probable cause, establishing whether the Divinity School Board has jurisdiction, specifying the charge, informing the accused of his/her rights, indicating the hearing options, impaneling the board in the event of a formal hearing, preparing the case, setting the date for a hearing, producing witnesses and imposing any sanctions or penalties.

E. Formal Hearings.

- (1) If the student elects (or the associate dean specifies) a formal hearing, the associate dean with jurisdiction shall convene the board at the earliest possible point.
- (2) A faculty or student member shall disqualify himself/herself if he/she is otherwise involved in the case and the student charged may challenge the seating of a faculty or student member of the board (stating in writing the reasons for so doing). The chair (or in the event of a challenge to the chair, the associate dean) shall accept or reject the challenge. In the event of a disqualification of a member, the appropriate alternate shall be seated.
- (3) Hearings shall be closed. Formal hearings shall be recorded and the recording retained for a period of three years.

F. Hearing Procedures.

- (1) The rights of the accused and the hearing procedures outlined in sections I "Role of Accused" and J "Hearing Procedure," in the "Judicial System of Duke University," Appendix of *Bulletin: Information and Regulations* shall guide the associate dean and the adviser or the board in the conduct of a hearing (e.g. judgments of expulsion or suspension require concurrence of four of the five voting board members).
- (2) The board (or associate dean and faculty adviser) may impose the sanctions specified in the same Appendix singly or in combination (e.g. expulsion, suspension, probation, warning, fine, recommendation of counseling, etc.).

G. A person convicted may appeal his/her case to the Dean by providing written notice of that intention within 48 hours and a written statement of the grounds within 7 days of the receipt of the verdict. Grounds for appeal include new and significant evidence which might alter the case or violation of due process.

ENROLLMENT SUMMARY 1987-88

Divinity School Students, total 365

304	M.Div	(200 men, 104 women)
14	M.R.E.	(2 men, 12 women)
19	Th.M.	(15 men, 4 women)
19	Special	
	Students	(13 men, 6 women)

Graduate Division of Religious Studies, total 80

1	M.A.
79	Ph.D.

Total 445

GEOGRAPHICAL DISTRIBUTION 1987-88

Alabama	3	North Carolina	228
Arkansas	2	Oklahoma	3
California	2	Ohio	11
Colorado	1	Pennsylvania	10
Florida	13	South Carolina	11
Georgia	2	South Dakota	1
Idaho	1	Tennessee	6
Illinois	1	Texas	7
Indiana	3	Virginia	38
Iowa	1	West Virginia	3
Kansas	1	Wisconsin	1
Kentucky	1	Foreign:	
Maryland	2	Bermuda	1
Minnesota	1	Guyana	1
Mississippi	3	Korea	2
Montana	1	Liberia	2
New Jersey	2	West Germany	3
New York	4	Zimbabwe	2

Denominations Represented 1987-88

African Methodist Episcopal	5	Lutheran Church of Oldenburg	1
African Methodist Episcopal Zion	3	Missionary Baptist	1
American Baptist	2	Moravian Church in America	1
Baptist	5	National Baptist	1
Christian Scientist	1	Presbyterian	2
Church of Christ	1	Presbyterian Church in America	1
Christian Church (Disciples of Christ)	5	Presbyterian Church in USA	12
Church of God	1	Quaker (Society of Friends)	1
Church of God in Christ	1	Roman Catholic	6
Church of The Nazarene	1	Unitarian Universalist	1
Christian Methodist Episcopal	1	United Church of Christ	4
Episcopal	15	Southern Baptist	9
Original Freewill Baptist	1	United Methodist	266
General Baptist State Convention	1	Unaffiliated	14
Lutheran Church of Bavaria	1		365

INSTITUTIONS REPRESENTED

Agnes Scott College	1	Berry College	1
Albright College	1	Bethune-Cookman College	1
Alliance College	2	Birmingham-Southern College	2
Appalachian State University	6	Bluefield State College	3
Atlantic Christian College	5	Boston University	2
Auburn University	1	Bowling Green State University	1
Averett College	3	Brevard College	1
Baldwin-Wallace College	1	Broward Junior College	1
		Bucknell University	1

California Polytechnic State University	1	Lubbock Christian College	1
Campbell College	2	Malone College	2
Canisius College	2	Marquette University	1
Carnegie-Mellon University	1	Mars Hill College	2
Carson-Newman College	2	Marshall University	1
Centenary College	1	McKendree College	1
Centre College	1	McMurry College	3
Clarion University	1	Methodist College	6
Clemson University	1	Miami University	1
Cleveland State University	1	Middle Tennessee State University	2
College of New Rochelle	1	Middlebury College	1
College of St. Rose	1	Morehead State University	1
Columbia College	1	Morehouse College	1
Concord College	1	Mount Olive College	1
Concordia College	1	Mount Saint Clare College	1
C.W. Post College	1	New Hampshire College	1
Dartmouth College	1	North Carolina A & T State University	3
Detroit Institute of Technology	1	North Carolina Central University	2
Dickinson College	1	North Carolina State University	3
Duke University	4	North Carolina Wesleyan College	4
Earlham College	1	Northeast Louisiana State University	1
East Carolina University	2	Oakland University	1
East Tennessee State University	1	Ohio Northern University	1
Eastern Mennonite College	1	Ohio State University	1
Eastern Michigan University	1	Ohio University	1
Edinboro University	1	Ohio Wesleyan University	1
Elizabeth City State University	1	Old Dominion University	1
Elon College	1	Oral Roberts University	4
Emerson College	1	Oregon State University	1
Emory and Henry College	6	Otterbein College	1
Emory University	1	Pembroke State University	5
Empire State College	1	Pfeiffer College	7
Episcopal Theological Seminary	1	Piedmont Bible College	1
Erlanger University	1	Principia College	1
Erskine College University	1	Purdue University	3
Ewha Women's University	1	Radford University	1
Fayetteville State University	2	Raymond College	1
Ferrum College	4	Reinhardt College	1
Florida Atlantic University	1	Rice University	2
Florida Southern College	6	Salem College	2
Florida State University	1	Simpson College	1
Fort Hays State University	1	Sioux Falls College	1
Francis Marion College	1	Smith College	1
Furman University	2	Southern Illinois University	1
George Mason University	2	Southwest Virginia Community College	1
Georgetown College	1	St. Andrews Presbyterian College	2
Georgia Southern College	3	St. Mary of the Plains College	1
Gordon College	1	State University of New York	1
Greensboro College	2	Stephens College	1
Grove City College	3	Stetson University	1
Guilford College	1	State University of New York—New Paltz	1
Hampden-Sydney College	1	State University of New York—Albany	1
Hampton University	2	State University of New York—Geneseo	1
Hendrix College	3	Southwestern College of Christian Ministries	1
High Point College	7	Swarthmore College	1
Hobart and William Smith Colleges	1	Sweet Briar College	1
Houghton College	1	Taylor University	1
Indiana University	2	Tennessee Technological University	2
Iowa State University	1	Tennessee Wesleyan College	1
John Wesley College	1	Texas Christian University	1
Johnson C. Smith University	1	Texas College	1
Korea University	1	Texas Tech University	2
Lasell Junior College	1	Texas Wesleyan College	2
Lebanon Valley College	2	Trinity University	1
Lenoir Rhyne College	1	Tusculum College	1
Livingstone College	2	University of California—San Diego	1
Longwood College	3	University of North Carolina—Chapel Hill	27

University of North Carolina at Greensboro	1	University of Idaho	1
University of North Carolina at Charlotte	1	University of Illinois	1
University of North Carolina at Wilmington	1	University of New York	1
Union College	1	University of Wyoming	2
University of South Carolina	3	University of South Carolina—Coastal	
University of Arizona	1	Carolina	1
University of Central Florida	2	Virginia Commonwealth University	1
University of Illinois	1	Virginia Polytechnic University	2
University of Indianapolis	1	Virginia State University	3
University of Kentucky	1	Virginia Wesleyan College	4
University of Maryland	2	West Virginia Wesleyan College	1
University of Mississippi	1	Wabash College	1
University of South Florida	1	Wake Forest University	7
University of Tennessee	1	Wesley College	1
University of Texas—Austin	1	West Virginia Institute of Technology	1
University of Texas—El Paso	1	West Virginia University	1
University of the Pacific	1	Western Carolina University	2
University of the South	1	William and Mary College	2
University of Virginia	1	William Carey College	1
University of West Florida	1	Wingate College	1
University of Southern Mississippi	3	Winston-Salem State University	2
University of Delaware	1	Wittenberg University	2
University of Florida	2	Wofford College	2

ENROLLMENT 1987-88

Candidates For the Master of Divinity Degree

Adams, Brian K., (B.A., McMurry College), Hillsborough, North Carolina
Adams, Thomas J., (B.B.A., University of Kentucky), Somerset, Kentucky
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Allen, Pamela K., (B.A., Trinity University), Durham, North Carolina
Allen, Patricia G., (B.S., MTSU), Pineville, North Carolina
Anderson, Jerome, (B.A., Georgia Southern College), St. Matthews, South Carolina
Aydtlett, Wilbur C., (B.A., University of North Carolina), Butner, North Carolina
Babb, Mechthild S., (B.A., University of South Carolina at Columbia), Myrtle Beach, South Carolina
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Bailey, Jarvis E., (B.A., Virginia Polytechnic University), Accomac, Virginia
Bailey, Keith A., (B.A., Tennessee Wesleyan College), Etowah, Tennessee
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Bennett, Byard J., (B.A., Duke University), Potomac, Maryland
Bennett, Jonathan L., (B.S., Eastern Mennonite College), Rockbridge Baths, Virginia
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Blanksma, Daryl M., (B. of Music, University of Idaho), Nampa, Idaho
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Boggs, Robert S., (B.A., M.A., Furman University), Greenville, South Carolina
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Brock, A. C., (B.Ma, University of Mississippi; M.Ed., Mississippi College), Durham, North Carolina
Brookshire, Jeffrey A., (B.S., Purdue University), Reynolds, Indiana
Broom, Thomas C., (B.S., Park College), El Paso, Texas
Brown, Arthur, (B.A., Cleveland State University), Charlotte, North Carolina

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 Matthews, Tony H., (B.A., High Point College), Vale, North Carolina
 May, Raegan V., (B.S., Texas Tech University), Sudan, Texas
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 Maynard, Philip R., (B.S., University of Cent. Florida, M.Ed., University of Kansas), Plant City, Florida
 Mayo, Barbara B., (B.S., Florida State University), Ft. Walton Beach, Florida
 McCalmont, Cynthia M., (B.A., University of Virginia), Durham, North Carolina
 McDowell, Thomas D., (B.A., Bluefield State College), Yanceyville, North Carolina
 McFarland, Dena J., (B.A., James Madison University), Wilmington, North Carolina
 McIntosh, Cynthia S., (B.S., Western Carolina), Kernersville, North Carolina
 McLean, David A., (B.A., St. Andrews College), Cary, North Carolina
 McLean, Laurie K., (B.A., M.A., Rice University), Durham, North Carolina
 McNamara, Ann N., (B.A., Marquette University), Chapel Hill, North Carolina
 Meeks, Donald L., (B.A., McKendree College), Fairfield, Illinois
 Milbourne, Mary H., (B.S., Miami University), Durham, North Carolina
 Miller, Patrice C., (B.A., Empire State College), Durham, North Carolina
 Mills, Ronald V., (B.S., Ferrum College), Dry Fork, Virginia
 Milner, M. H., (B.A., University of Virginia), Charlottesville, Virginia
 Minnick, Jonathan A., (B.S., William and Mary), Raleigh, North Carolina
 Moats, Jean E., (B.A., Otterbein College), Mt. Sterling, Ohio
 Money, Delma L., (B.S., Winston-Salem State), Pinnacle, North Carolina
 Moody, Fran T., (B.A., Carson-Newman College), Durham, North Carolina
 Moore, Keith D., (B.S., Longwood College), Brookneal, Virginia
 Moore, Samuel H., (B.A., Greensboro College), Reidsville, North Carolina
 Moore, Susan M., (B.A., University of North Carolina), Chapel Hill, North Carolina
 Morgan, Molly D., (B.A., Agnes Scott College; M.F.A., UNC- Greensboro), Reidsville, North Carolina
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 Morton, Thomas M., (B.A., M.Ed., University of North Carolina), Greensboro, North Carolina
 Murphy, James O., (B.A., Mars Hill College), Durham, North Carolina
 Murray, Michael L., (B.A., Livingstone College), Clarkton, North Carolina
 Nave, Gary K., (B.A., Emory and Henry), South Boston, Virginia
 Nelms, Benjamin E., (B.A., North Carolina Wesleyan), Milton, North Carolina
 Nicholson, Sue Ellen, (B.A., North Carolina State), Rocky Mount, North Carolina
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 Whitmire, John T., (B.S., Jacksonville State University), Jacksonville, Alabama
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 Wimberley, Richard E., (B.A., University of North Carolina), Raleigh, North Carolina
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Wingo, Norma W., (B.A., Methodist College), Rougemont, North Carolina
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 Lartey, Seth O., (B.A., Livingstone College), Wilson, North Carolina
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 West, Sarah R., (B.A., Salem College), Greensboro, North Carolina
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Candidates for the Master of Theological Studies Degree

Brown, Boyd J., (B.A., Swarthmore College), Annandale, Virginia
 Brown, Christopher M., (B.A., Pfeiffer College), Lenoir, North Carolina

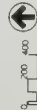
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 Jones, Charles B., (B.A., Morehead State University), Durham, North Carolina
 Lambert, William R., (B.A., Lubbock Christian College), Durham, North Carolina
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 Schultz, Sara M., (B.A., Earlham College), Chapel Hill, North Carolina
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 Chabaku, Motlalepula, (M.S., NC A&T State University; M.Div., Lancaster Theological Seminary), Asheboro, North Carolina
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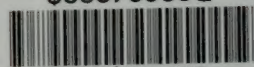
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